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SECOND REPORT

OF THE

AGRICULTURE OF MASSACHUSETTS.



SECOND REPORT

ON THE

AGRICULTURE OF MASSACHUSETTS.

By HENRY COLMAN,

COMMISSIONER FOR THE AGRICULTURAL SURVEY OF THE STATE.

COUNTY OF BERKSHIRE,

1838.

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1839.

SECOND REPORT
COMMONWEALTH OF MASSACHUSETTS.

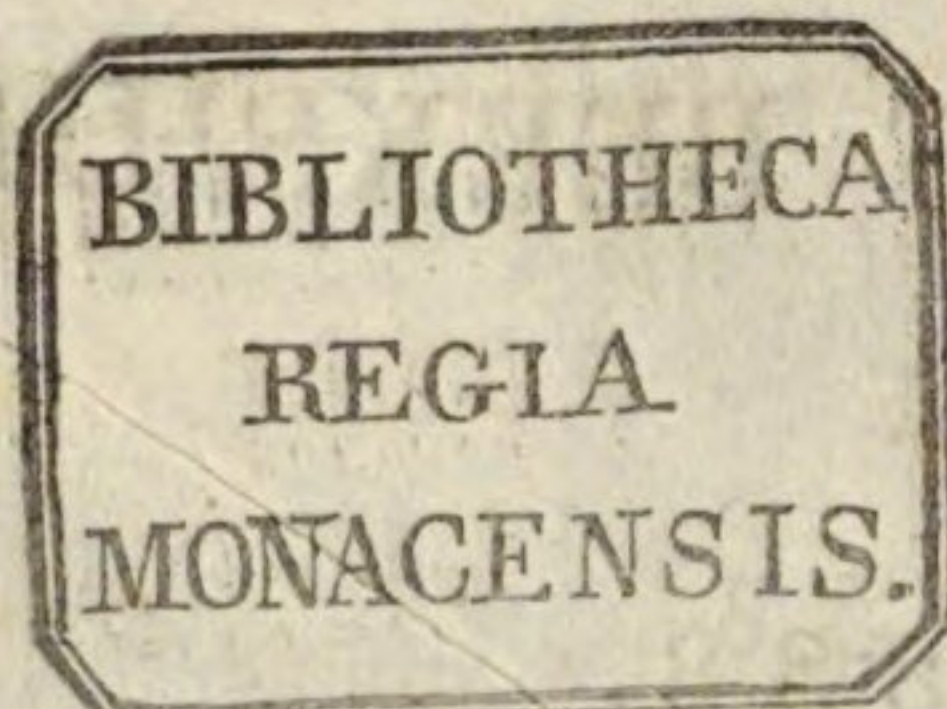
IN COUNCIL, Feb. 27, 1839.

His Excellency the Governor presents the Second Report of the Commissioner for the Agricultural Survey of the State, and it is thereupon *Ordered*, That the Secretary cause three thousand copies thereof to be printed.

Attest,

JOHN P. BIGELOW,

Secretary of the Commonwealth.



To His Excellency

EDWARD EVERETT,

Governor of Massachusetts :

SIR,—

I have the honor to submit to you my second Report of the Agriculture of Massachusetts. It is principally confined to the county of Berkshire ; but embraces also much incidental matter.

I have omitted in this report the consideration of one of the great interests of the agriculture of Berkshire, the Sheep Husbandry. I have gone largely into the other great interests of the county, the Dairy Husbandry ; and on that account judged it expedient to postpone the discussion of the Sheep Husbandry to the report of the agriculture of the county of Franklin. The agriculture of Berkshire and Franklin counties are in many respects similar and nearly related ; and in the report of Franklin, I propose to treat this subject at large.

The surveys of Franklin county and Middlesex county are completed, as far as I have deemed the views of the government to extend ; and the reports will be made with all practicable despatch. In the collection, arrangement, and comparison of such a variety of facts, however, as the survey necessarily embraces, time and labor are requisite to do justice to the subject and to the Commonwealth. No time shall be lost in finishing these reports, which are already in progress.

The report of Franklin will embrace among other subjects an extended view of the Sheep Husbandry ; and the report of Middlesex the culture of hops, the redemption of peat-bogs, and particular improvements in the cultivation of arable lands ; on which subjects information has been particularly solicited. The counties of Worcester and Hampshire have been half explored.

I had great pleasure in attending the Cattle Shows of the Middlesex, Worcester, and Hampshire, Hampden and Franklin Agricultural Societies ; and the town Shows of Barre and Petersham ; and in witnessing the spirit of improvement every where awake.

Having at my personal expense obtained as exact returns as I could get of the agricultural produce of several towns in different parts of the Commonwealth, Pittsfield in Berkshire, Bernardston in Franklin, Barre in Worcester, and Marlboro' in Middlesex, and deeming these documents of much interest to the agricultural community, I shall annex the four last to this report, without delaying their publication for the reports of the counties to which they appropriately belong. If desirable, they can be reprinted in their proper connexion.

I have procured for gratuitous distribution among the farmers, some of the best wheat of Portugal; of the best teasle seed from Germany; a barrel of genuine Italian wheat; and a very superior variety of Indian corn. I have likewise sent to Leghorn and Sicily for the best varieties of Indian corn and wheat known in those countries. While I sustain my present official relation to the agriculture of the Commonwealth I shall avail myself of every opportunity of advancing in this or any other way the interests of the farmers. I have already laid the foundation for the benefit of the Commonwealth, of an agricultural museum, intended to embrace samples of the best agricultural products of the State and country, which are susceptible of permanent preservation. Several varieties of corn, grains, and grasses, have been sent in; and specimens of some valuable implements.

I have taken measures to procure a complete collection of specimens of the grasses of the Commonwealth; and of the weeds most pernicious to agriculture; in the hope, that from these beginnings, which must necessarily be small, a respectable collection may be at last formed, the utility of which must be obvious.

The extensive correspondence occasioned by this appointment, the various inquiries on agricultural subjects daily addressed to me, and the respectable attendance upon the meetings of farmers and others for agricultural conversation and discussion, which have been held weekly during the session of the Legislature in the Representatives Hall, at the instance of the Commissioner, evince the concern which is so extensively felt in this great interest of the community, and the strong desire for information. In being obliged to go on thus single-handed, I cannot but hope that my strong claims upon the candor of the agricultural community will be admitted.

Permit me, sir, to add, that, as a native of Massachusetts, it affords me the highest pleasure and pride, that this survey has been undertaken and continued under the auspices of a chief magistrate, who, to the most intelligent discernment and the most just appreciation of the true interests of the Commonwealth, adds a hearty and untiring devotion of his time and talents to their accomplishment.

I have the honor to be, Sir,

With the highest respect,

Your fellow-citizen,

HENRY COLMAN.

Boston, Feb. 1839.

REPORT

ON THE

AGRICULTURE OF THE COUNTY OF BERKSHIRE.

GENERAL DESCRIPTION.

1. **BOUNDARIES AND SITUATION.** The County of Berkshire forms the western part of Massachusetts. On the north line it is bounded by Vermont; on the west by New York; on the south by Connecticut. On the east it lies contiguous to the counties of Franklin, Hampshire, and Hampden. Its length on the western line exceeds fifty-seven miles. Its breadth at the north, on a line running east and west, is about fourteen miles—at the south, where it is bounded by Connecticut by a line parallel with its northern line, its breadth is about twenty-four miles. The breadth in some parts north of the south line, reaches to twenty-six miles; and in parts not far from the centre of the county, it is about sixteen miles. It lies between Lat. $42^{\circ} 2'$ —and $42^{\circ} 44'$ north. The longitude of the north-west corner of the county is nearly $73^{\circ} 23'$ west; that of the south-west corner is a little greater. The area of the county is about 950 square miles or 608,000 square acres. The towns embraced within the limits of this county are thirty; and the population by the official returns of May, 1837, was 39,101.

2. **DIVISION OF TERRITORY.** From the reports of the valuation Committee we gather the following returns: There are in Berkshire county

In Tillage,	-	-	-	Acres	26,817 $\frac{11}{24}$
English and Upland Mowing,	-	-	-	"	55,495
Fresh Meadow,	-	-	-	"	7,729 $\frac{3}{4}$
Pasturage,	-	-	-	"	117,059 $\frac{1}{12}$
Wood,	-	-	-	"	60,997 $\frac{1}{8}$
Unimproved,	-	-	-	"	123,966 $\frac{1}{2}$
Unimprovable,	-	-	-	"	103,694 $\frac{5}{12}$
Owned by Towns or other Proprietaries,	-	-	-	"	15,010
In Roads,	-	-	-	"	6,623 $\frac{1}{2}$
Covered with water,	-	-	-	"	7,261 $\frac{1}{2}$
Total,					524,655 $\frac{13}{24}$

3. GENERAL FEATURES AND ASPECT. The county of Berkshire is an inland county ; at its nearest point it is about twenty-five miles from any navigable waters. The county is well watered. The Housatonic river, a small stream, extends through it longitudinally. It rises from within about twelve miles of its northern boundary, and flowing in a southerly direction, it receives on its passage the contributions of many minor streams, until it passes beyond the bounds of the state into Connecticut, and empties at last into Long Island Sound. The Hosick river rises in the immediate vicinity of the fountain head of the Housatonic ; flowing northerly and then westerly it passes through the south-west corner of Vermont into New York and presently mingles its waters with those of the Hudson. Deerfield river passes for a short distance through the northern part of this county. Two branches of the Westfield river take their rise likewise in this county ; and two streams of inconsiderable size under the name of Green river ; one in the northern part, emptying into the Hosick and one on the south emptying in Sheffield into the Housatonic, are likewise deserving of notice. There are other streams, furnishing multiplied advantages to farmers and manufacturers ; and presenting valuable sites for mills and mechanical objects, which it is not necessary to particularize. The hills every where abound in springs of the purest water ; and in an agricultural view no country can be better supplied. The Pontoosuck lake in nearly the centre of the county, one of the largest collections of

water in the county, presents its mirrored surface to the traveller as one of the most beautiful objects on which the eye can rest. After furnishing several extensive and valuable mill powers at its out-let, its superfluous waters flow southerly until they mingle in the Housatonic.

The surface of the country is broken and mountainous. There are generally considered three distinct ranges of mountains running from north to south the whole length of the county. The easterly branch or range of mountains is a part of the Green mountains, which reach far into Vermont. The westerly branch is denominated the Taconic Range. The intermediate mountains are known by various local names, and are rather insular elevations than a continued range. Saddle Mountain in the north-western corner of the county, and Mount Washington forming its south-western corner are magnificent elevations and the highest mountains in the State. Saddle mountain has in many places been cleared high up its sides; but its summits are crowned with a thick and beautiful forest of maple, oak, walnut and other varieties of hard wood. The ascent of Mount Washington on the western and the north-eastern side is long and wearisome, but not difficult; and after ascending by the course of the road two miles or more, you reach an extended space of gently undulating country, and almost entirely surrounded by a belt or succession of hills of different elevations, which, from a distance, and before the mountain was ascended, seemed to form only a single elevation. This comparatively level space is cleared and cultivated, furnishing many valuable farms favorable for pasturage. It forms the town of Mt. Washington, which now includes the whole elevated country, and that small portion of territory, making the south-western angle of the state, and known as Boston Corner.

The Hosick mountain, lying at the north-eastern part of the county, is a considerable elevation, difficult of ascent by the road on the eastern side; and steeper, and in some parts precipitous, on its western side. The stage road passes over this mountain; and like Mount Washington, the top of the mountain presents a rolling country, with a productive soil, furnishing excellent pasturage, and valuable and thrifty farms. The other mountains in the county are insulated. Several of them are immense masses of lime-stone and marble; but

many of the minor elevations are rounded and beautiful summits, cultivated to their tops.

4. SOILS.—In passing through the county from east to west, you meet a succession of valleys of remarkable beauty and fertility ; and on the Housatonic, the Hosick, the Green river, and Hop Brook, there are extended alluvions or intervalles, which furnish a productive soil. The hills every where abound with springs of the purest water ; and these added to the numerous permanent streams intersecting the country in various directions, afford extraordinary advantages to the farmers of Berkshire over the tenants of a level country.

The alluvial meadows on the Housatonic seldom exceed a mile in breadth. These are mainly to be found in the Pittsfield valley, in South Lee, in Stockbridge, in Great Barrington, and in Sheffield. In general, these lands are annually overflowed, and the deposits of rich mud superinduced by such freshets, prevent the necessity of any artificial manuring ; and keep these lands in a state of exuberant fertility. These deposits are mainly composed of finely comminuted sand, and rich loam and vegetable mould ; and in many cases the deposits have accumulated to a great depth, as the presence of large logs and partially decayed stumps and roots of trees, found often at the depth of fifteen and twenty feet below the surface, evince.

Of peat bogs, there are few in the county. These are of small extent ; but some found in the neighborhood of Pittsfield, which have undergone the process of ditching, draining, and manuring, present encouraging examples of an enterprising and intelligent husbandry. This description of land throughout the state is destined to become highly valuable and productive. For fuel, where the use of peat for fuel prevails, this land, or rather the right to dig the peat, is sold for three dollars per square rod, the purchaser being limited as to the depth he shall go. As manure for upland, when decomposed and dissolved by heating manures, or deposited in the barn yard, where it absorbs the liquids of the manure heap, it has been found efficacious and valuable. As land for cropping, under good management, of which I propose presently to give several remarkable examples, it has proved eminently productive in grass, potatoes, turnips, and carrots.

The soils in Berkshire are various. There is little pure clay. There is little pure sand. The Hosick mountain and the Green

mountain range is generally composed of granitic rock. The other mountains, and in general the rest of the county, rest upon beds of limestone or mica slate, which sometimes rise into high and abrupt elevations, and are every where to be seen showing themselves above the surface. Some parts of the county are rich in iron ore, especially the beautiful valley of Richmond, and the vicinity of the highlands designated as Mount Osceola. In many parts of the county, as in Lanesboro', Williamstown, and Stockbridge, the soil presents the appearance of rich vegetable mould resting upon a substratum of a greenish color, strongly argillaceous, and retentive of moisture. The same remarks apply to the soils in Cheshire, furnishing the richest pasturage to be found in the state. These lands are well adapted to grass, potatoes, and all esculent vegetables. Other lands in the county are better suited to grain crops, being gravelly and abounding in calcareous matter ; as the Pittsfield valley ; much of the land in Great Barrington, west of the village ; and especially the town of Egremont, and the lands lying towards the eastern side of Mount Washington, on the great road from Egremont to Salisbury in Connecticut.

It is a singular fact, not less surprising to the learned geological surveyor than to others, that the soils in Berkshire, though resting upon limestone, contain no larger proportion of the carbonate of lime in a state of detrition, than many other soils in the state where limestone is not found. It was supposed, that the continual abrasion or decomposition of the stones by the natural operations constantly going on, or by cultivation, would have imparted a large proportion of this ingredient to the soils. Nor can its absence be accounted for on the supposition, that it existed in much greater quantities formerly, but has been exhausted by cultivation. Much of the land in the county is comparatively new ; and, as the crops throughout the county are generally consumed on the farms, it would seem as though what had been taken up by them, which, after all, is a very minute quantity, must have been again returned in the manures applied. Is it not more probable, that as the country is comparatively new, and the vegetable mould consequently more abundant, the specimens analyzed may have been taken near the surface, and therefore exhibit a less quantity of the carbonate of lime than if the country

had been longer cultivated, and the vegetable mould, the accumulation of centuries, had been more nearly exhausted?

Of the advantages in respect to fertility of a considerable proportion of calcareous matter in soils, there is no doubt. Yet the operation of lime in any of its forms to the purposes of vegetation is as yet a subject involved in so much obscurity, that we can hardly speak upon it with any confidence; and the particular office that it performs in the wonderful processes of vegetable life and growth, is among those triumphs which chemical science has yet to achieve.

The theory of Dr. Dana, of Lowell, given in the report of the learned geological surveyor, of the last year, is original and probable. Future experiments, and much more extended observations are necessary, in order to determine its soundness. The fertility of a soil depends, to a certain extent, upon the presence of lime; but it is not in proportion to its quantity. The presence of lime in the form of a carbonate amounts, it seems, in some of the fertile soils of Europe, as given by the French chemists, to 25, 28, 30, and $37\frac{1}{2}$ per cent.; yet in some of the richest of the western soils it does not amount to more than 3.3 per cent.; and lime, in all its forms, does not exceed 5.1 per cent. This is certainly a great disparity; and it suggests the inquiry, whether this difference is actual, or the result of different modes of analysis or examination. The theory of Dr. Dana, and the observations of many intelligent practical men confirm the suggestions, implies that the office performed by lime in the soil is not primary, but secondary. The most productive soils are those in which the various earths are compounded but not chemically combined; but the earths alone, however intermixed, will not give fertility, without vegetable soluble matter. The quantity of lime or of silex taken up in the formation of the plant is small and inconsiderable. The vegetable matter in the soil constitutes the food of plants. Lime and marls may be useful in their mechanical influences and changes upon soils of an aluminous and argillaceous character, when applied in large quantities; a use, which the cost of lime in Massaceussetts forbids us to expect will prevail to any considerable extent, excepting in the limestone regions. But it would seem, that the main effects to be expected from lime is in neutralizing the acids, which render a soil sour and unproductive; in converting insoluble into soluble matter; and in thus preparing the vegetable matter in the soil for the food of

plants, and bringing it into a condition by which it can be taken up by their roots. The mode by which lime assists vegetation is still unascertained. Nature draws an impenetrable veil over her subtle operations; and at a certain point, human sagacity, however acute and prying, is repelled under the stern mandate, "Hitherto shalt thou come, but no farther." The rich alluvial soils of the West, and the calcareous regions of western New York, are equally productive of wheat. We have instances of like success, and uniform success, in which, wheat has been constantly cultivated with hardly a failure, (and where, when it has failed, its failure has evidently depended upon external atmospheric influences, rather than upon any conditions of the soil,) for periods of many years on the same farm; and at the ordinary yield of from twenty to thirty bushels to the acre. This has happened on alluvial lands and granitic soils, where the presence of lime has scarcely been detected, and where none has been artificially applied. We have a high opinion of the value of lime applied to the land in the form of a sulphate, as plaster of paris, or of phosphate, as in bone manure; or as a carbonate in the form of ground lime-stone, or as quick lime, which soon becomes carbonated. We have a high opinion of other alkaline manures, when applied to the soil, though the beneficial results, as of common wood ashes for example, are not always seen, and not always uniform. But the fertility of a soil depends much more upon the vegetable matter contained in it, what Dr. Dana denominates the "geine," or vegetable food, than upon the presence or absence of any particular earth or salts. The efficacy of lime and ashes I do not question; but their indispensableness in any quantity beyond what the former is found, in some form, in most soils, (and I understand Dr. Dana to say that the particular form in which it is found, is of little comparative importance,) is not so far confirmed by any facts which have yet come to light in the experience of some of the most observing farmers of the state, that it may be considered as established. But on this subject I shall have occasion to speak hereafter.

The soils in the county of Berkshire abound in rich vegetable mould. Any person who has seen the luxuriant pastures of Cheshire, the hills in Lanesboro' Lenox and Stockbridge, the vicinity of Pittsfield, both the rolling grounds and the meadows on the Housatonic, and some of the beautiful lands in the neighborhood of

Green river in Great Barrington, Konkapot river in Sheffield, Guelder Hollow in Egremont, the alluvial lands in Lee, and the valley of Great Barrington as well as parts of Richmond, Hancock, and Williamstown, and other parts of the county equally deserve to be named, can have no question of the abundance of vegetable mould, and the eminent fertility of much of this favored territory.

5. **MARKETS AND MANUFACTURES.**—In an agricultural view the county of Berkshire is singularly favored in respect to its climate, its soil, its water, its capacity of production, and its vicinity to markets. By the great lines of communication now in the course of construction, and which concentrate in this county, it will be brought into much nearer communication with the great marts upon the seaboard. With the exception of pork, which has usually gone to Hartford, and in some rare instances to Boston, the produce of Berkshire beyond what is demanded for their manufacturing population, goes to New York. The Hudson is reached from almost any part of the country in a distance of thirty-five to forty miles; and from all the points on that magnificent thoroughfare of wealth and population, the city of New York is reached in a few hours. The immense consumption of this great city, this insatiable consumer, demands all the contributions which can be poured into it, for use or traffic.

The greater part of the population of Berkshire are occupied in the pursuits of agriculture. The establishment of manufacturing villages creates a demand for the products of agricultural labor, and a permanent and certain home market is established for the supplies, which the farm will furnish. The manufactures bearing directly upon agriculture, are those of woollen cloths and paper. The number of pounds of wool used by the factories in the county from the returns of 1837, appears to have been 875,957 lbs. The amount of teasels purchased by these same manufactures is not ascertained. The quantity of paper manufactured amounted in value to 333,000 dollars. What amount of this was in paper made from the straw of oats or rye cannot be determined. "In 1837," an intelligent farmer of Lee writes me, "about five hundred tons had been used in their manufactures. Wheat, rye, and oat straw, if not rusted, was used indiscriminately, and was purchased at the mills at \$5 per ton." The advantages to agriculture of the latter kind of manufactures, and of

the appropriation of the straw of a farm to such purposes, is, to say the least, of an equivocal character.

6. CLIMATE.—The season in Berkshire, is in the valleys not very different from that on the Atlantic coast. I shall subjoin some meteorological tables kept at my request by an intelligent observer in Lenox ; and shall add to these a table from the memoirs of the American Academy, showing the comparative progress of vegetation on a former occasion. With the exception of the high-lands and the mountainous portions of Berkshire, there are no crops raised in other parts of the state, which may not be cultivated to advantage. Indian corn is often successfully cultivated in some of the elevated locations ; but these places are most favorable to oats and barley. Potatoes and turnips are likewise abundant in these hill towns, and the former of superior quality. The springs, however, in these parts of the county, are generally about three weeks in the rear of those in the valleys ; the cold winds from the north sweep over them and retard vegetation. The autumnal frosts on the other hand, seem proportionately kept back ; and vegetation here retains its verdure ; and potatoes, for example, continue to grow sometimes for weeks after every thing has been destroyed by the frosts in the low-grounds.*

II. CROPS.

The crops in Berkshire are those cultivated in other parts of the state ; and consist of the usual grasses, herds grass, red top, and clover. Of grains, Indian corn, wheat, barley, rye, and oats ; and of esculent vegetables, potatoes, carrots, ruta бага, mangel wurtzel, and common white turnip. In addition to these, buck-wheat is raised to a considerable extent, some small amount of flax, and comparatively large amounts of teasels. The cultivation of hops was at one time attended to in some places ; but is abandoned on account of the low price. Large amounts of rye have heretofore been used for distillation ; but this is now pursued to a small extent.

Indian corn, the great grain crop of New England, with the exception of the two cold years 1836 and 1837, has been always

* Appendix A.

raised in the favorable locations in Berkshire with advantage. In some towns, however, the high prices obtained for wool induced the farmers to abandon entirely the growing of grain for bread, and devote their farms to the sheep husbandry.

Of corn, large crops have been frequently raised. In one of the hill towns more than one hundred and ten bushels have been more than once obtained. In these cases a favorable situation was selected on the southern declivity of a hill, and the best cultivation was employed, the ground having been highly dressed with the spent ashes of a potash establishment.

1. AMOUNTS OF CROPS.—I shall subjoin some statements of the amount of crops in Berkshire. In many cases, wherever practicable, I have collected a number of respectable farmers together, and obtained from them some general average of the crops in the town. In other cases I have obtained from individuals, distinguished for their practical skill and knowledge, the average amount of their own crops, either in conversation, or from the farm reports with which they have favored me.

In Sheffield the crops of corn are rated at 30 bushels to the acre. 60, 80, 93, and 110 have been obtained. Of oats, 35 to 50 bushels are the average product. 80 bushels, 84 bushels and upwards have been obtained. Of rye, 6 acres gave 30 bushels to the acre—8 acres gave 30—and one acre $46\frac{1}{2}$ bushels. Of buckwheat, 30 bushels. Of wheat, without manure 18 to 20 bushels—29 bushels, 34 bushels, 36 bushels, 40 bushels have been obtained. Of potatoes 200 bushels—2 acres gave 600 bushels— $\frac{1}{4}$ of an acre gave 165—ruta бага 800 bushels.—pease, in one case, 100 bushels on 2 acres. Of hay, on the alluvial lands 2 tons—and in two cases, one of 4 acres and one of 5 acres, 3 tons were obtained. In the eastern part of the town, called Konkapot, from the name of the small stream flowing through it, the subjoined actual crops have been obtained to the acre. Corn 60 bushels, wheat 40, oats 50, 60; rye 25, potatoes 300. In Egremont the crops are thus rated:—corn without manure, but plastered; 25 to 35 bushels, 40, 50 and 55 bushels—rye 12 to 15 bushels—oats 35 to 40—wheat 15—potatoes 175 to 200—hay $1\frac{1}{4}$ to $2\frac{1}{2}$ tons. Fifteen acres produced 52 bushels of corn to the acre, and the same land afterwards yielded 1100

bushels of oats ; 700 bushels of rye have been obtained on thirty-two acres.

In Great Barrington, corn is rated at 49, 59 bushels ; 70 bushels and 102 have been obtained. Rye at $12\frac{1}{2}$, 24. Oats, 30, 40 ; 90 bushels to the acre were raised last year upon 8 acres of land. Wheat, 12 bs., 18 bs. Pease and oats, 35 bs. Ruta бага, 700 bs. Potatoes, 175, 320 $\frac{1}{2}$. Grass, $1\frac{1}{4}$, $1\frac{3}{4}$ tons.

In Stockbridge, corn, 40 bs. 45 bs. to the acre. Rye, 35 bs. 35 bs., once 40 bs. Barley, 25 bs. Potatoes, 225 bs., 300 bs. These returns from two highly intelligent farmers. The only returns of wheat obtained, were 35 bs. 38 bs. measured to the acre. In one case, 4 tons of hay to the acre.

In New Marlboro', corn, plastered only, 20 bs.; manured, 30 bs. Rye, 12, 20 bs. Spring wheat manured, 20 bs. Oats, 30 bs. Potatoes, 200. 60 bs. of oats have been raised ; 400 bs. of potatoes. Grass, $1\frac{1}{4}$ ton, $1\frac{1}{2}$ ton.

In Dalton, one farmer rates his crops of corn, at 40 bs.; of rye, at 15 bs; of potatoes, 300 bs.; and has obtained 80 bs. of wheat from two acres.

In Otis, the crops are, of corn, 30 to 50 bs.; of rye, 20 bs.; of oats, 35 bs.; 70 bushels have sometimes been obtained ; of hay, 1 ton.

In Richmond, through the public spirited exertions of a highly intelligent and respected friend, my returns are more numerous than from any other part of the county. Wheat is returned at 10 bs., $11\frac{1}{2}$, 12, 13, 15, $16\frac{1}{2}$, $17\frac{1}{2}$ to the acre. Corn, at 30 bs., 32, 40, 50, 54, 60. Oats, 20 bs., 25, 30, 32, 35, 40, 58. Rye, 9, 12, 14, 30. Buckwheat, 10, $12\frac{1}{2}$, 32, 35. Pease, 24. Ruta бага, 400, 660. Potatoes, 150, 160, 175, 180, 200, 208, 225.

In Alford, my returns are, corn, 40 bs.; through the town, 25 bs. Wheat, 15. Rye, 10. Oats, 35. Buckwheat, 25. Potatoes, 200. 80 bs. oats have been measured from an acre ; and $2\frac{1}{2}$ and 3 tons of hay. The town of Alford does much more than produce its own bread, pork and beef.

In Lenox, the average returns given me were as follows : Corn, manured, 40 bs. Wheat, 20. Rye, 15. Oats, 40. Grass, $1\frac{1}{2}$ tons. Extraordinary crops were likewise authenticated : Corn, in

two cases, 120 bs. Spring wheat, 37 bs. Winter rye, 40 bs. Summer rye, 25 bs. Oats, 80 bs.

In Lee, the returns were, Corn, 30 bs. Winter rye, 15 bs. Oats, 40 bs. Buckwheat, 28 bs. Ruta бага, 400 bs. Potatoes, 300, 400 bs. Fifty and sixty bushels of oats have been obtained ; rye, 40 bs. on new land ; 80 bs. Corn ; 700 and 900 Ruta бага. One farmer states, that in 1837 on $2\frac{1}{2}$ acres, he raised 2000 bs. Ruta бага, and on 2 acres, 1200 bs. of Carrots.

In West Stockbridge, the reports given are, Winter wheat, 25 to 30 bs. Corn, 40 bs. Oats, 50 bs. Rye, 15 bs. Potatoes, 200 bs. 400 bs. In last case, 30 bs. were used for seed.

In Pittsfield, the crops are thus rated. Corn, 30 bs. 40 bs. Oats, 35 bs. 40 bs. 45 bs. Wheat, 15 bs., 18 bs., 20 bs. Rye, 20 bs. Potatoes, 250 bs. The following are extraordinary and well authenticated returns—Three and one quarter acres produced 1280 bs. Potatoes ; 1 acre and 66 rods, 1700 bs. Ruta бага. The crops of another farmer, whose cultivation is excellent, are rated thus : Corn, 50 bs. ; Oats, 45 bs. ; Rye, 25 bs. ; two acres of Potatoes in 1837, produced him 560 bs. to the acre ; $1\frac{1}{4}$ acre gave him 900 bs. Ruta бага. Another farmer, from 9 acres, obtained at one crop, 160 bs. Wheat ; Meslin, Rye and Wheat, 80 bs.—240 bs., or 26 4-9 bs. to an acre. From 14 acres, he obtained 190 bs. Wheat ; 120 Meslin ; 90 Rye ; 400 bushels ; or 28 4-7 bs. to an acre. Grass, $1\frac{1}{2}$ ton, 2 tons.

The return of crops in Lanesboro', give, of Wheat, 20 and 25 bs. ; Corn, 50 bs. ; Oats, 40 ; Ruta бага, 900 bs.

In Williamstown, I am favored with the returns only of a single farmer, whose cultivation is highly creditable to him. Wheat, 20 bs. Oats, 50 to 70 bs. Corn, 50 to 60 bs. Barley, 20 bs. Potatoes, 350 to 400 bs.

In Cheshire, the product of corn is rated at 40 bs. Oats at 40 bs. Wheat, 20 bs. In 1836, 3 acres produced more than 1800 bs. Potatoes ; in 1837, $2\frac{1}{2}$ acres, 1000 bs. Potatoes.

I could extend the above returns ; but these will present a fair sample of the common cultivation of the county.

2. ROTATION OF CROPS.—The usual rotation of crops is corn or potatoes, in most cases manured ; then oats ; third crop, wheat or some other grain, with which the land is laid down to grass. The

land then commonly remains in grass for two or three years, and the same process is repeated. There are cases in which the same crop is pursued on the same land, two or three years in succession, and without diminution of the crop. These are cases of extraordinary fertility or abundant manuring ; but it is not a practice greatly prevalent ; nor to be generally commended.

3. **EXPENSES AND PROFITS OF CROPS.**—I have been anxious to obtain true returns of the actual expenses and profits of crops in a regular rotation ; and I shall subjoin minutes of these expenses, furnished by experienced and judicious farmers in different parts of the county.

In the estimates which have been made of the expenses of cultivating any crops, it will be understood, that a man's labor has always been estimated at one dollar per day ; and the same for a yoke of oxen, and half a dollar for a horse. In many parts of the country this, undoubtedly, is an over-estimate of the price of labor ; but it seemed necessary to fix some price as a uniform standard throughout the state ; and in the cost of labor involved in the production of any crop, one dollar is to be considered as the representative of a day's work. The prices of labor and the prices of board vary in different parts of the state. The estimated price includes both labor and board.

Expenses of cultivating an acre of corn in Sheffield, Mass.

Ploughing,	\$1 50
Manuring, 15 loads, at 50 cents, half the manure to be charged to the corn,	3 75
Getting out manure, \$2 ; planting, \$1 25 ; seed, 25,	3 50
Hoeing twice, \$2 ; gathering and husking, \$2,	4 00
Interest on land, at \$50 per acre,	3 00
	\$15 75

Product.

Corn-stalks for fodder, equal to $\frac{3}{4}$ ton of hay,	\$5 00
Forty-five bushels of corn, at 75 cts,	33 75
	\$38 75
 Profit on the corn,	 \$23 00

Estimated expenses of an acre of Potatoes.

Ploughing,	\$1 50
Manuring as per corn, \$3 75 ; hoeing, \$4 00,	7 75
Digging the crop, \$12 ; interest on land, \$3,	15 00
Seed, 15 bushels,	3 75
	\$28 00

Product, if 300 bushels,	\$75 00
“ 400 “	100 00
Suppose 300 bushels,—Profit,	\$47 00

Estimated expenses of an acre of Ruta Baga.

Ploughing and preparing ground, planting on ridges, eight days,	\$8 00
Twenty loads of manure, half charged to this crop,	5 00
Seed, \$1 ; sowing with machine, 50 cts.,	1 50
Fifteen days' hoeing, \$15 ; 12 days' harvesting, \$12,	27 00
Rent of land, at \$50,	3 00
	\$44 50
Product of above, 800 bushels, at 12½.	100 00
Profit,	\$55 50
—Cost 5⅔ cts. per bushel.	

I give another estimate in Sheffield.

Corn,—one acre.

Ploughing,	\$1 75
Manured in the hill, 20 loads, half to the corn,	5 00
Seed, 6 qts., 25 cts.; manuring and furrowing, \$4,	4 25
Planting, \$2 ; hoeing, \$3,	5 00
Topping and binding stalks, \$1 ; gathering and shocking, \$2,	3 00
Interest on land, valued at \$40,	2 40
	\$21 40

Product.

Thirty-five bushels corn, at 75 cts.,	\$26 25
Stalks, valued at twice cost of cutting,	2 00
Bottom stalks or butts,	1 00
	\$29 25
Profits,	\$7 85

A very different estimate from the preceding is generally put upon the stalks. Throughout the state, the farmers, who are careful and successful in the management of their corn fodder, consider it for any neat stock as equal in value to three-fourths, and most of them to a ton of hay.

Another farm in Sheffield, on the alluvial or river land, gives the following estimate :

Ploughing,	\$2 50
Ten loads of manure in the hill, half to the corn,	2 50
Getting out manure,	2 00
Planting, \$1 ; seed, 25 cts.	1 25
Hoeing three times,	4 00
Topping the stalks,	50
Gathering and husking,	3 00
Interest on land, at \$75,	4 50
	\$20 25

Produce.

Sixty bushels corn, at 75 cts.,	\$45 00
Corn fodder,	3 00
	\$48 00
Balance in favor of the crop,	\$27 75

Egremont.—The usual rotation is oats, rye, corn, oats or rye and grass seed.

Expenses of an acre of corn.

Ploughing and harrowing,	\$1 50
Manure, 15 loads, half charged to the corn crop,	3 75
Getting out manure, \$1 ; planting, \$1 ; seed, 25 cts.,	2 25

Hoeing three times, \$3 ; gathering and husking, \$2,	5 00
Interest on land, at \$40,	2 40
	\$14 90

Produce.

Twenty-five bushels, at \$1,	\$25 00
Top stalks,	1 00
The bottoms considered equivalent to expense of horse for ploughing.	
	\$26 00
Profit,	
	\$11 10

2d.—Oats.

Ploughing twice, \$2 ; 2½ bs. seed, \$1 ; sowing, 50 cts.,	\$3 50
Reaping and gathering, \$1 50 ; carting, 50 cts.,	2 00
Interest on land, at \$40,	2 40
	\$7 90
Straw equivalent to expense of threshing.	
Twenty-five bs. oats, half price of corn, 50 cts.,	\$12 50
Profit,	\$4 60

Egremont.—Another estimate of expenses of corn crop without manure, but plastered.

Ploughing, \$2 ; planting, \$1 ; seed, 25 cts.,	\$3 25
Plaster, 1 bs. 30 cts.; hoeing three times, and horse, \$4,	4 30
Topping stalks, 50 cts.; picking and husking, \$2,	2 50
Interest on land, at \$40,	2 40
	\$12 45

Produce.

Thirty bushels corn, at 75 cts.,	\$22 50
Fodder,	3 50
	\$26 00
Profit on corn,	
	\$13 55

2. Expenses of an acre of Oats.

Ploughing and harrowing,	\$2 50
Two and one-half bushels seed,	1 25
Cradling and binding,	1 50

Getting in, 55 cents,	55
Threshing, at 4 cts.,	1 60
Interest on land, at \$40,	2 40
	\$9 80

Produce.

Forty bushels, at 50 cts.,	\$20 00
Straw, equivalent to threshing,	1 60
	\$21 60
Profit,	
	\$11 80

In Egremont, 700 bs. of rye were obtained on thirty-two acres of land.

Egremont has about 75 farms. On these farms, 500 bs. of oats are produced on an average to each. Several farmers raise 2000 bs. each. The wheat cultivation has been successful among them for the last ten years. They raise an ample supply of bread corn; and export considerable quantities.

In Great Barrington the rotation is corn on greensward; oats with clover; winter rye, and land laid down to grass.

Expenses of an acre of Indian Corn.

Ploughing 2, harrowing 1, seed 50,	3 50
30 loads manure spread, at 50 cts. half charged to the corn crop,	7 50
Planting 1 50, hoeing twice 4,	5 50
Gathering and husking 3 50, interest on land at 40, 2 40,	5 90
	\$22 40
Corn fodder equal to one ton of hay,	8 00
40 bushels corn at 75 cts.	30 00
Profit,	15 60

2nd.—Oats.—Expenses of one acre.

Ploughing 2, harrowing 75, seed $2\frac{1}{2}$ bush. $93\frac{3}{4}$,	3 68 $\frac{3}{4}$
1 bush. plaster 50, gathering 1 75,	2 25
Interest on land at \$40, 2 40,	2 40
	8 33 $\frac{3}{4}$

Produce 40 bush. half price of corn, $37\frac{1}{2}$,	15 00
Straw equivalent to the threshing,	15 00
Profit,	\$6 66 $\frac{1}{4}$

In other cases the expenses of an acre of corn without manure, but with plaster, at \$17 49. The corn at 30 bush. at 80 cts. \$24 00. The corn fodder at $\frac{1}{2}$ ton of hay, \$4 00. The profit in this case \$10 51.

Of oats, the expense at \$10 10—the crop 40 bush. at 40 cts., \$16 00—the profits \$5 90—the straw deemed equivalent to the threshing.

Great Barrington.—Another estimate of Indian Corn.

Ploughing 2 00,	2 00
10 loads manure at 50 cts., half the manure only to be charged to the corn,	5 00
Getting out and spreading manure 3 00, planting 1 50,	4 50
Seed, 7 qts. 34 cts.,	34
Hoeing twice on the intervale lands,	6 00
Cutting up and stacking 2 00, husking 2 00,	4 00
Interest on land at \$60,	3 60
Product,	\$25 44
35 bush. corn at 75 cts.,	26 25
Fodder equivalent to one ton stock hay,	7 00
	33 25

Balance in favor of corn, \$7 81

In another case the yield of corn is ascertained on the whole farm to average 49 bush. Gross expense of cultivation without interest on land, 12 34. This is an actual account; the labor in this case, however, is not charged at \$1 00 per day, but at its actual cost. Yield of wheat on this farm 18 bush. to the acre. Expenses of cultivation \$11 00. Of oats ordinarily 50 bush.; and expenses of cultivation \$7 56. Of potatoes 320 $\frac{1}{2}$ bush. to the acre, and expenses of cultivation \$23 50.

In another case the yield and expenses are thus stated :

Yield per acre—Wheat,	12 bush.	Expenses,	\$11 88
Indian Corn,	59 “	“	30 69
Rye,	12½ “	“	5 10
Oats,	30 “	“	5 10
Pease and Oats,	30 “	“	6 35
Potatoes,	175 “	“	33 59
Ruta Baga,	750 “	“	50 06

In these cases it is presumed no rent is charged on the land. The last account is an actual return of the last year, when the extreme severity of the drought was unfavorable to large returns.

In Otis, two estimates were given.—Indian Corn, one acre.

Expenses.		Product	
Ploughing,	\$4 00	30 bush. corn	30 00
Manure, 8 loads,	3 00	Corn fodder,	3 00
Getting out manure,	2 00		
Planting 3 00, seed 25,	3 25		33 00
Hoeing twice,	6 00		23 05
Gathering and husking,	3 00		
Interest on land,	1 80	Profit,	\$9 95
	\$23 05		

Estimate from another Farmer.

Expenses.		Product	
Ploughing 2 days,	\$5 00	50 bush. corn,	\$50 00
Manure 30 loads spread,		Corn fodder equal to	
half to the corn crop,	7 00	½ a ton of hay,	5 00
Getting out half 3 00,	3 00		
Planting 4 ft. by 3 ft.,	2 00		55 00
Hoeing three times,	6 00		
Gathering and husking,	5 00	Profit in favor of the	
Int. on land at \$30 pr. acre,	1 80	corn,	\$25 20
	\$29 80		

In Stockbridge I give the exact expenses of cultivating six acres of corn in one instance.

Ploughing with oxen six days,	\$12 00
Harrowing 2 days with team,	4 00
Plaster, but no manure, 4 bush.,	2 00
Planting 3½ ft. by 4 ft.,	6 00
Furrowing, 2 00	2 00
Ploughing the field two furrows in a row each way, turned the furrows from the hill each time 4 ways,	8 00
Hoeing \$6, second ploughing \$8, second hoeing \$6,	20 00
Topping stocks and putting up \$5,	5 00
Gathering and husking ; 10 bush. made a day's work ; the whole field,	20 00
Interest on the land at \$30 per acre,	10 80
	\$89 80

Product of the above six acres.

Corn fodder equal to half ton of hay per acre,	\$24 00
200 bush. sound corn at 75 cts.,	150 00
Pumpkins 2 loads to an acre, worth more than \$1 per load if ripe ; excellent for pork and beef,	12 00
	186 00
Balance in favor of crop,	
	\$96 00

Stockbridge.—Expenses of an acre of Oats.

Ploughing \$1 50, harrowing \$1, seed 2 bush. 80 cts.,	\$3 30
Cradling and tying up \$1 50, getting in 50 cts.,	2 00
One bush. plaster 50 cts., rent of land at \$50, \$3,	3 50
	\$8 80
45 bush. oats at 40 cts.,	18 00
Straw pays expense of threshing,	
Profits on crop,	\$9 20

Expenses of cultivating an acre of Ruta Baga.

Ploughing twice old land,	\$2 00
One pair of horses will plough 2 acres per day, 30 loads manure, half charged to this crop,	7 50
Getting out half the manure, 1½ day,	3 00
Ridging 50 cts., sowing with machine \$2, seed half bush. 50 cts.,	3 00
3 ft. 3 inch. between the rows, plants in the row 1 ft. apart.	
Thinning out \$2, 2 days' weeding \$2,	4 00
Three hoeings 6 days \$6, gathering \$8,	14 00
Rent of land at \$40,	2 40
	\$35 90

Product.

Five hundred and fifty bs., worth one shilling for pork or beef,	91 66
Profits on the crop,	\$55 76

Estimated expenses of an acre of Potatoes.

Ploughing green-sward,	\$2 00
Harrowing 50 cts., seed 25 bush. \$6 25,	6 75
Manure 15 loads in the hill, half to this crop,	3 25
Planting and manuring \$6,	6 00
Ploughing \$1, one hoeing \$2,	3 00
Digging and storing \$9,	9 00
Rent of land,	2 40
	\$32 40

Product.

Two hundred and sixty bs. potatoes at 20 cts.,	\$52 00
Profits on crop,	\$19 60

West Stockbridge.—Expenses of an acre of Corn.

Ploughing twice \$2 50, seed 5 qts. 25 cts.,	\$2 75
8 loads manure in the hill, ¾ cord each 75 cts., half to the corn,	3 00

Getting out and applying manure, two men and team	
one day ; half to the corn,	1 50
Planting 3 ft. by 4 ft.,	1 50
Ploughing and hoeing twice \$6, topping stocks 50 cts.,	6 50
Gathering 4 days \$4, cutting up butt stalks \$1,	5 00
Interest on land at \$40,	2 40
	\$22 75

Product.

Stalks and fodder equal to half ton of hay,	\$5 00
40 bush. corn at \$1,	40 00
	\$45 00
Profits on corn,	
	\$22 25

Expenses of an acre of Oats.

Ploughing and harrowing, \$1 50 ; half the manure, \$4 50,	\$6 00
Seed, 2½ bs. at 42 cts., \$1 05 ; cradling and tying up, \$1,	2 05
Getting in, 50 cts. ; interest on land, \$2 40,	2 90
	\$10 95

Product.

Forty bushels oats, at 42 cts.,	16 80
Straw equivalent to threshing.	
Profits on oats,	
	\$5 85

The rotation of crops in West Stockbridge is thus stated, on land well limed :

1. On a clover ley, winter wheat.
2. Wheat, 25 to 30 bs.
3. Corn, 40 bs., with manure.
4. Corn, without manure.
5. Either oats, rye, or wheat, at pleasure, and laid down to grass.

West Stockbridge produces oats enough for sale beyond their own wants to purchase all their bread. They make pork enough for their own consumption ; and generally produce a sufficiency of the substantial of life for their own consumption.

Lee.—Expenses of an acre of Corn.

Ploughing, \$2 ; harrowing, 50 cts.; seed, 37½ cts.; planting, \$2,	\$4 87½
Manure, 20 large loads—say, ½ cord each—50 cts. ; 5 cords to the corn crop, \$5 ; getting out half manure, \$1 50,	6 50
Three hoeings, \$6 ; cutting up and gathering, \$2 ; husking, \$3,	11 00
Interest on land, at \$40,	2 40
	\$24 77½

Product.

Fodder, equal to ¾ ton of hay,	\$5 00
Corn, 50 bs., at 75 cts.,	37 50
Add 4 loads of pumpkins,	4 00
	\$46 50
Profits on corn,	\$21,72½

Expenses of an acre of Oats.

Ploughing, \$2 ; seed, 2½ bs., 94 cts.,	\$2 94
Manure and getting out ; half belongs to the oat crop,	6 50
Threshing, \$1 50 ; Interest on land, \$2 40,	3 90
	\$13 34

Product.

Oats, 50 bs., at 37½ cts.,	\$16 75
Eighty bundles straw, at 2 cts. per bundle, as sold at paper-mill,	1 60
	\$18 35
Profits on oat crop,	\$5 01

It seems bad economy to sell the straw at this rate. The manufacturer, perhaps, cannot afford to give more. The farmer cannot afford to take so little. The value of an acre of oat straw, yielding 50 bs. to the acre, even where manure is estimated as cheaply as above, cannot be overrated at four or five dollars. It is not to be recommended to sell it even for that.

Expenses of cultivating an acre of Potatoes.

Ploughing, \$2 ; seed, 20 bs., \$5 ; planting, \$3,	\$10 00
Ten loads manure in the hill, \$5 ; getting out manure, \$3,	8 00
Hoeing twice, \$5 ; digging, one-tenth to the crop, \$6 25,	11 25
Interest on land, at \$40,	2 40
	\$31 65

Product.

Two hundred and fifty bs., at 25 cts.,	\$62 50
Profits on the crop,	\$30 85

Expenses of an acre of Ruta Baga.

Ploughing, \$1 50 ; harrowing and ridging, \$1,	\$2 50
Manure, 40 loads,—20 charged to this crop,	10 00
Sowing, 50 cts.; seed, 50 cts.; thinning and hoeing, \$6,	7 00
Two next hoeings, \$6 ; gathering, \$8,	14 00
Rent of land,	2 40
	\$35 90
Seven hundred bs. ruta бага, at 20 cts.,	\$140 00
Profits on crop,	\$104 10

The value credited to the crop in this case will be regarded as high ; but I give the estimate of the farmers themselves, who report their cultivation.

Lenox.—Expenses of an acre of Indian Corn.

Ploughing green-sward, \$2 , seed, 25 cts.,	\$2 25
Twenty-five loads of manure, half to corn,	6 25
Getting out manure, \$3 12½ ; dragging, \$1 ; planting, \$2,	6 12½
First hoeing, \$3 50 ; second do, \$2 50 ; topping stalks,	
\$1,	7 00
Husking and gathering, \$3 ; getting in butts, \$1,	4 00
Interest on land, at \$40,	2 40
	\$28 02½

Product.

Corn fodder, equal to 1 ton of hay, . . .	\$9 00
Forty bs. corn, at 75 cts., . . .	30 00
	\$39 00
Profits on corn, . . .	\$10 97½

Oats.—Expenses of one acre.

Ploughing, \$1 50 ; seed, 2½ bs., \$1 12½ ; sowing, \$1, . . .	\$3 12½
Cradling and tying, \$1 50 ; team, 50, . . .	2 00
Half the manure of the corn crop, and half expense of getting out the manure, . . .	7 81
Interest on land, at \$40, . . .	2 40
	\$15 83½

Product.

Forty bs. oats, at 37½ cts, . . .	15 00
Straw an equivalent to threshing. . .	
Balance against the oats, . . .	83½

It is plain, in the above two cases, that the corn crop was underestimated for such cultivation ; and that the efficacy and value of such manuring are by no means exhausted by two crops.

It rests upon the most respectable and credible testimony, that in two instances in this town, 120 bs. of corn have been obtained upon an acre ; 37 bs. of spring wheat ; 40 bs. winter rye, and 80 bs. of oats to an acre. What has been done can be done ; and it is easy to see how inconsiderable is the increase of expense in obtaining such crops, compared with the superior value over the crops reported as above.

Expenses of an acre of Potatoes.

Ploughing, \$2 ; manuring, same as corn, \$9 37½, . . .	\$11 37½
Seed, 20 bs. \$5 ; hoeing, \$5 ; digging, \$10, . . .	20 00
Interest on land, at \$40, . . .	2 40
	\$33 77½

Product.

Two hundred and fifty bs., at 25 cts., . . .	\$62 50
Profits on potatoes, . . .	\$28 72½

I shall now proceed to give in detail an account of a wheat crop in Lenox, in 1837, by a farmer, whose uniform success in raising wheat is ample proof of his agricultural skill.

The extent of land sown was 2 acres 60½ rods ; the whole crop was 89 bs. 26 qts. On one of the two acres the crop amounted to 40 bs. 20 qts. The mode of cultivation pursued by this farmer is somewhat peculiar. I shall refer to it more fully in a subsequent part of my report. At present, I only say, that the land on which this crop was obtained, was the preceding year in corn ; and the corn crop planted on an inverted green-sward. Some of this field was manured in the hill ; and on some of it the manure was spread at the rate of twenty common cart-loads to the acre. There was not a remarkable difference between the appearance of that part of the corn crop manured in the hill, or that on which the manure was spread. A circumstance, to which the attention of farmers is particularly invited, is, that in cultivating the corn, in hoeing and harrowing, particular care was taken not to turn up or break the sod from the bottom. I shall now quote from the account given by this intelligent cultivator :

“About the 15th of April, the corn hills were split with the common harrow ; and ploughed once with great care. A thin coat of barn manure was spread. The manure was principally fresh horse-manure. After sowing and dragging, leached ashes were spread over that part of the field not manured. Six bushels of clean seed were sown, after having been prepared by soaking in brine from 24 to 48 hours, and rolled in finely slacked lime, care being taken to have as much as possible adhere to the kernel. Care was taken to cover the wheat sown before it became dry. After sowing, the ground was dragged (harrowed) every day for five or six days, alternately crossing the field in opposite directions. Dry light soils are greatly benefited by working them while the dew is on. Heavy soils, however, should be thoroughly warmed and dried, previously to working them. When the blade was up two or three inches, a good dressing of plaster was given.”

Entire expenses of cultivation.

1 day with one pair of horses, splitting hills,	\$2 00
½ “ “ “ dragging,	1 00
2 days' ploughing, at \$2,	4 00

6 bs. seed wheat, at \$3,	18 00
Preparing seed, 50 cts.; 1 peck salt, 25 cts.,	75
2 bs. lime, 68 cts.; labor in sowing, \$1,	1 68
3 days, man and team, harrowing the wheat,	6 00
2 men, 3 days, to cart and spread manure, team and cart,	9 00
24 loads of manure, at 50 cts.,	12 00
350 lbs. plaster, at \$13 per ton,	2 27
Sowing plaster, $\frac{1}{3}$ of a day,	34
2 hands, 3 days' reaping, \$6; board of hands, \$1 50,	7 50
3 days' work binding, \$3; board, 75 cts.,	3 75
Carting, 2 hands $1\frac{1}{2}$ day, and team, \$3 75; board, 75 cts.,	4 50
	\$72 79

The soil is, what is here called, a dark loam, strongly siliceous. The substratum is mica slate.

This farmer has been uniformly successful in obtaining good crops of wheat, unless when he has suffered from accidents, not connected with the cultivation, and not foreseen nor controllable by human sagacity or skill.

In Richmond, the expenses of cultivation are thus estimated :

One acre of Corn.

Ploughing, \$2; seed, 5 qts., 25 cts.,	\$2 25
15 loads manure, $\frac{1}{3}$ cord each, at 50 cts., \$7 50, half charged to the corn,	3 25
Getting out and spreading manure, 3 days, half charged,	1 50
Harrowing, $\frac{1}{2}$ day, \$1; planting, $2\frac{1}{2}$ feet each way, \$1,	2 00
Hoeing 3 times, \$3; and horse, \$1 50,	4 50
Topping stalks, \$1; gathering and husking, \$4,	5 00
1 bs. plaster, 50 cts.,	50
Interest on land, at \$40,	2 40
	\$21 40

Product.

Forty-five bushels, at 75 cts.,	\$33 75
Fodder, equal to $\frac{3}{4}$ ton of hay,	7 50
	41 25
Balance in favor of corn,	\$19 85

Expenses of an acre of Oats.

Ploughing and dragging \$2, 2½ bush. seed 94 cts.,	\$2 94
Half the cost of manure \$4 75,	4 75
Cradling and binding \$1, getting in 50 cts.,	1 50
Interest upon land at \$40.	2 40
Plaster 50 cts.—threshing paid by straw,	50
	\$12 09

Product.

40 bush. at 37½ cts.,	\$15 00
Balance in favor of the crop,	\$2 91

Expenses of an acre of Potatoes.

Ploughing \$2, seed (supposed) 15 bush \$3 75,	\$5 75
Plaster 1½ bush. \$1 50, hoeing twice \$4,	5 50
Gathering \$7, interest upon land \$2 40,	9 40
	\$20 65

Product.

200 bush. at 25 cts.,	\$50 00
	\$29 35

No manure is used in this case ; but it cannot be supposed that such crops can be often repeated without manure.

Expenses of an acre of Ruta Baga.

Ploughing three times \$6,	\$6 00
Manure 20 loads, half to this crop—getting out manure \$3,	8 00
Hoeing once \$8, gathering \$11, interest on land \$2 40,	21 40
	\$35 40

Product.

400 bush. at 16⅔ cts.,	\$66 66
Balance in favor of crop,	\$31 26

I have been much disappointed in not having received from the intelligent and enterprising farmers of Pittsfield, such estimates of the expenses of cultivation as I had expected.

One of the best farmers in the town and in the state, puts down the expense of cultivating an acre of wheat at \$9 ; of oats at \$8 ; of rye at \$7 ; of potatoes at \$28 ; of ruta бага at \$25. The items of expense are not given.

I subjoin from another enterprising cultivator, whose whole management in respect to cultivation and stock is entitled to high commendation, an exact account of a crop of ruta бага and flat turnips in 1837.

The charges for preparing, cultivating, gathering, and the product of 4 acres Ruta Baga and English Turnips, are as follows :

April 21 and 22—2 days man and horse-team first	
ploughing 2,	\$4 00
June 5 and 6—2 days man and horse-team, second	
ploughing 2,	4 00
“ 6 to 9—3 teams and 3 hands, 3 days each,	
making 9 days drawing on 64	
loads manure, \$1 50,	13 50
“ 10—2 men spreading manure, \$1,	2 00
“ “ 1 day man and horse-team harrowing,	2 00
“ “ 1 day man and horse ridging,	1 50
“ “ 1 day man sowing,	1 00
“ “ 1½ lbs. seed, at the price I sold	
seed, \$1,	1 50
	\$29 50
July 5 and 6—8 days' labor hoeing and thin-	
ning, \$1,	\$8 00
“ 12 and 13—8 days' labor hoeing and thin-	
ning, \$1,	8 00
	\$16 00
Oct. 16 to 18—18 days' labor charged for gath-	
ering, and 3 teams each 3 days,	
drawing, at 75 cts.,	\$20 25
Cr. Deduct for tops, \$2 per acre,	8 00
	\$12 25
	\$57 75

The quantity gathered from 1st. and 2d. acres, 1600 bs.

3d. " 1080 "

4th. " 900 "

3580 bs.

less than 2 cts. per bs.

If the interest on land were charged at \$40

per acre, 9 60

and the manure at its value, (a compost

of muck and stable,) 32 00 41 60

\$99 35

The turnips would cost not far from $2\frac{3}{4}$ cts. per bs., \$98 45.

He adds, "from my own observation much depends on having the land for the turnip crop, as also all root crops, potatoes excepted, mellow; they ought to be hoed at least three times, and oftener if the crop will admit of it. My crop of 1836, was hoed three times in the month of July, the ground was kept light until the tops covered it."

I annex to this the statement of a crop of Ruta Baga in Great Barrington, from another farmer, whose agriculture shows his industry and skill.

The amount of land was 1 acre and 20 rods. The amount of product, well cleaned roots, was 46,495 lbs.

The land on which they were raised was green-sward, and ploughed the last days in April, 1837. It had had no manure for three years preceding; it then received a thorough harrowing; it remained until the first of June; then harrowed it again smooth; and drew on thirty loads short barn manure; principally the manure of sheep, which is deemed preferable to any other for this root; this was spread and harrowed until it was thoroughly incorporated with the soil; it was then with a plough thrown into ridges 24 inches apart. It was then sowed on the 24th of June, which was ten days after the proper season for sowing; when well out of the ground, they were plastered at the rate of one bushel to the acre; they were then ploughed and hoed twice. In cultivating them great care should be taken to have them stand 24 inches apart between the rows; and the plants 6 or 8 inches from each other in the rows.

The expense of cultivating this acre and 20 rods was as follows :

2 ploughings \$4, harrowing \$3, $\frac{3}{4}$ lb. of seed 75 cts.,	\$7 75
30 loads manure at 62½ cts. per load,	18 75
Ridging 75 cts., planting 50 cts.,	1 25
3 ploughings before hoeing \$2, 6 hoeings \$12,	14 00
Gathering \$6,	6 00
	\$47 75

In another case this same farmer obtained from 90 rods of ground 605 bs. The expenses of cultivation were as follows :

2 ploughings \$1 50, harrowing \$1, ridging 34 cts.,	
planting 25 cts.,	\$3 09
Seed 37½ cts., 3 hoeings \$5, gathering \$3 25, manure	
\$7 50,	16 12½
	\$19 21½

Whole weight of crop, 25,410 lbs.

In Alford the subjoined estimates were obtained :

Expenses of cultivating an acre of Corn.

Ploughing \$2, harrowing \$1, seed 25 cts., planting \$1,	\$4 25
Manure, 30 loads spread, 15 charged to corn, \$7 50,	7 50
Getting out manure \$3 50, hoeing twice \$3,	6 50
Gathering and husking \$4, interest on land at \$60,	
\$3 60	7 60
	\$25 85

Product.

Corn fodder equal to one ton of hay,	\$8 00
50 bs. corn at 75 cts.,	37 50
	\$45 50
Profits on corn,	\$19 75

Oats, one acre.

Ploughing \$1 50, harrowing \$1, 2½ bs. seed \$1,	\$3 50
Cutting and binding \$1, getting in 50 cts., interest on	
land \$3 60,	5 10
Threshing paid for by straw.	
	\$8 60

Product.

40 bs. oats at 40 cts.,	16 00
	\$7 40
Profits on oats,	

From Lanesboro' the subjoined return was obtained from a farmer whose whole establishment is a model of neat and exact husbandry ; in neatness and carefulness perhaps no where surpassed.

Ploughing \$2, seed $\frac{1}{2}$ bs. 50 cts.,	\$2 50
Manure, 20 cart-loads, $\frac{1}{3}$ of the cord to a load, 50 cts.,	
half to be charged to the corn,	5 00
Getting out manure \$3,	3 00
Planting 3 ft. square, \$1 50, hoeing 3 times \$7 50,	9 00
Cutting up and gathering \$2, husking \$2,	4 00
Interest on land at \$40,	2 40
	\$25 90

Product.

Corn fodder equal to 1 ton of hay,	\$9 00
50 bs. corn,	50 00
Pumpkins, 2 loads,	2 00
	61 00
Profits on corn,	\$35 10

This farmer is in the practice of occasionally planting potatoes among his corn. In this case he plants his corn 3 ft. 6 inch. apart in the rows, and a hill of potatoes between the hills of corn. In this way he frequently obtains 150 bs. potatoes upon an acre, and considers the crop of corn not much lessened on account of the potatoes. The injury to the corn is in this case rather a matter of judgment than of exact experiment ; and therefore this conclusion is in my mind to be somewhat distrusted. Corn and potatoes planted in alternate rows, or one row of corn and two of potatoes, have succeeded well ; and from two acres of corn and potatoes planted thus alternately, there is little doubt that more corn and more potatoes may be obtained than from two acres, where the corn and the potatoes are planted separately. In cases of alternate planting, the corn has a great advantage in its exposure to the sun and air. In the case above mentioned the potatoes occasioned a very small diminution of the number of hills of corn on the land. Here the potatoes, which require, particularly, coolness and moisture, obtained an advantage in being protected to a degree, from the drought, by the leaves of the corn. In all these cases, however, of mixed crops, and of multiplying plants upon the land, two things are to be remembered ; the first, that they are always of more difficult cultivation ; a potato crop

is kept clean with much more difficulty than a corn crop, and the corn crop with potatoes intermixed with it, is kept clean with much more difficulty than when cultivated alone. The second thing to be remembered is, that the preparation of the land must correspond with the amount of vegetation grown upon it ; and a great crop can be expected only from a soil abundantly enriched. The art of producing fire and warmth without fuel, or of sustaining either vegetable or animal life without nutriment, is not yet attained.

The expenses of cultivating an acre of oats, as given by the same farmer, are subjoined :

Ploughing and dragging \$2, seed $2\frac{1}{2}$ bs. \$1 25,	\$3 25
Sowing 25 cts., half the manure and expense of getting out \$6 50,	6 75
Cradling and tying up \$1 50,	1 50
Interest on land at \$40,	2 40
	\$13 90

Product.

40 bs. of oats at 50 cts.,	\$20 00
Straw against expense of threshing.	
Profit on oat crop,	\$6 10

I shall add the return of another farmer, of the expenses of cultivating an acre of ruta бага :

Ploughing green-sward and dragging,	\$3 00
20 loads coarse manure at 50 cts., half to this crop,	5 00
Getting out with team, half the expense,	2 00
Drilling and sowing rows 24 inch. asunder,	50
Hoeing and weeding the first time,	3 00
Hoeing &c., second time \$3, gathering \$11,	14 00
Interest on land at \$45,	2 70
	\$30 20

Product.

900 bs. at 10 cts.,	\$90 00
	\$59 80

He subjoins the remark that ruta бага are in his opinion better for sheep than potatoes ; that his manure is spread on the surface and thoroughly harrowed in.

From Cheshire I have two estimates, which I subjoin :

Expenses of cultivating an acre of Corn.

Ploughing \$2, dragging \$1,	\$3 00
30 loads manure, half a cord to a load, $\frac{1}{3}$ to be charged to the corn,	5 00
Getting out manure \$1 25,	1 25
First hoeing \$2 25, second hoeing \$1 62 $\frac{1}{2}$,	3 87 $\frac{1}{2}$
Third hoeing \$1 25, topping stalks \$1 50,	2 75
Gathering and husking \$4, interest on land \$2 40,	6 40
	\$22 27 $\frac{1}{2}$

Product.

One acre of corn fodder equal to 1 ton of hay	\$9 00	
40 bs. corn,	40 00	\$49 00
Profits on corn,		\$16 72 $\frac{1}{2}$

Expenses of an acre of Oats.

Ploughing, harrowing and sowing,	\$1 50
37 $\frac{1}{2}$ bs. seed \$1 75, cradling and gathering \$1 50,	3 25
Manure \$6 25,	6 25
Interest on land at \$40,	2 40
	\$13 40

Product.

Straw against threshing.	
40 bs. oats at 50 cts.,	\$20 00
Balance in favor of oats,	\$5 60

I add the estimates of another farmer in Cheshire, who has had much and successful experience.

Expenses of an acre of Corn.

Ploughing green-sward, \$2 ; dragging, 50 cts.,	\$2 50
20 loads manure, half to the corn,	5 00
Getting out manure, \$3 ; planting, 3 ft. square, \$1,	4 00
Seed, 5 qts., 25 cts.; hoeing, including horse, \$2 50,	2 75
2d hoeing, \$1 50 ; 3d hoeing, \$1 50 ; topping stalks, \$1,	4 00
Gathering and husking, \$3 50 ; interest on the land, \$2 70,	6 20
	\$24 45

Product.

Fodder, equal to one ton of hay, . . .	\$8 00	
40 bs. corn—sometimes have 60, . . .	40 00	
		\$48 00
		\$23 55

Expenses of an acre of Oats.

Ploughing and dragging, \$1 50 ; seed, 2½ bs., \$1 25,	\$2 75
Manure, and getting out,	6 00
Cradling and harvesting, \$1 25 ; interest on land, \$2 70,	3 95
	\$12 70

Product.

40 bs. oats, at 50 cts,	\$20 00

Straw against threshing.

Had more than 45 bs. this year, 1838.

Profits on the crop,	\$7 30
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I have deemed it best thus at large to report the estimates of practical farmers in different parts of the county, as to the expenses of the cultivation of the different crops, which they are accustomed to raise. The price of labor, at a dollar per day, including board, is undoubtedly above its actual cost ; but it is better it should be so, than that a deceptive impression should be given as to the result by any under estimate of the expense. The estimates were procured sometimes from individual farmers ; at other times, at a meeting of farmers, where the estimates were corrected and determined, by being submitted to their united judgment. I only add, that the most earnest desire has been felt, and all possible pains taken to have these statements exact and true.

It will be remembered, that in the customary rotation of crops, as say, for example, Indian corn and oats, or potatoes, Indian corn and oats, or Indian corn, potatoes, and oats, the land is generally laid down to grass, and remains in grass from two to three or four years ; or in general, while it continues to yield a ton of hay to a cutting. In a rotation of corn, and oats, there is but one manured crop. Where Indian corn and potatoes precede oats, the land has usually two years' manurings. In the preceding estimates, it will be perceived that the

whole of the manure is charged to the cultivated crops, we mean cultivated in this case in distinction from grass crops. But it will be seen, at the same time, that the benefit of the manuring is felt in the grass as well as the grain crops. In order to judge of the profits of cultivation, it is proper to take into view the whole rotation,—say, of five or six years ; as, for example, corn, oats, grass three years ; or the following, which is an approved rotation : corn, oats with clover and plaster ; then wheat ; and grass three years. Now, what is the usual return of grass ? I have stated the amounts reported to me ; but I will here repeat them as given. In Pittsfield 1 and 2 tons to the acre. Sheffield, 2 tons, and $2\frac{1}{2}$ tons ; 4 acres yielded 12 tons ; 5 acres yielded 15 tons. West Stockbridge, 2 tons. In Stockbridge, from 60 acres of alluvial land a crop, averaging $2\frac{1}{2}$ tons of hay, has been repeatedly obtained. From 3 acres of land belonging to a highly intelligent and successful cultivator, whose lamented decease occurred the last summer, ten tons were obtained ; and this, too, from land redeemed from comparative worthlessness by his excellent management. Other reports give 2 tons to an acre ; one case an alluvial but cultivated meadow ; the other upon some of the high lands in this fertile town. In Egremont, $1\frac{1}{2}$ ton. In Lee, $1\frac{1}{2}$ ton. I might extend these returns, but it is not necessary. In estimating the returns of land, after obtaining the results of grain or cultivated crops, then add the grass of three years, averaging for the time, $1\frac{1}{2}$ ton to the acre. Deduct from these returns the cost of getting the hay, which is generally estimated at \$1 75 to \$2 per ton, and the interest of the value of the land. Suppose the return in hay to be $1\frac{1}{2}$ ton per acre, at \$8 per ton ; and in no part of Berkshire is it estimated at a lower rate ; the amount would be \$12. Then the cost of making the hay is \$3 ; and the interest upon the value of the land, at \$40 per acre, is \$2 40—leaving \$6 60 as the net return each year of the land in grass. This is a low estimate of the value of hay ; and a liberal charge for expenses. The hay, likewise, is presumed to be consumed on the place ; and there is, therefore, no loss of manure, as when the hay is sold from the farm.

The method of cultivation adopted by one farmer in Egremont deserves, perhaps, a particular notice. His farm consists of six hundred acres, three hundred and fifty of which are under improvement. The soil rests mainly on mica and argillaceous slate. The growth is

oak, walnut and chesnut, which, he says, will replace itself once in twenty years.

His average yield of crops is, corn, 25 30 bs., has raised 55 bs.; oats, 30 bs., weighing from 30 to 34 lbs.; winter rye, 20 bs.; winter wheat, 25 bs.; grass, 1 to 2½ tons.

His rotation is corn on green-sward, oats with clover, rye or wheat and the land stocked down to grass. He sows a peck of herds grass and clover, equally mixed, to an acre. But he uses no barn manure. He is accustomed to sow one bs. of plaster yearly, to an acre. He says he knows nothing of land becoming, as it is termed, plaster-sick. His crops are not large, but they are raised at a small comparative expense. This mode of management prevails in the neighboring district of New York, Columbia and Rennsellaer counties, where the whole country is agricultural, and in no part of the country is agriculture more successful. One farmer, for example, within ten miles of this farm, plants annually, in corn, 100 acres and raises upwards of 2500 bs. of corn. The operation of gypsum on these lands, which is obtained here prepared at about 10 dollars per ton, is singularly efficacious. But it is not the plaster alone that supplies the place of manure. It will be observed, that he turns under a large amount of vegetable nutriment, when he ploughs up his green-sward for corn; and when he ploughs in his oat-stubble charged with clover. This establishment on the side of the mountain, and near the turnpike-road leading from Sheffield to Hudson, is a fine example of highly productive and profitable agriculture.

4. TEASELS.—Of other crops raised in this county, the one that principally deserves attention, because the cultivation is not much known, is the Fuller's Teasel—(*Dipsacus Fullonum*.) This, in some few places, has been cultivated with eminent success. The burr produced on this plant is of great use in the manufacture of woollens, being employed to raise a nap on the cloth, that it may be prepared for the operation of the shears. Substitutes have been attempted in machinery made of steel; but there is an elasticity about the vegetable, which cannot be given to steel in this case; and the steel machinery is liable to tear the cloths. The amount of teasels consumed in the country is considerable, and is likely to increase. We have not, within reach, the means of determining the precise quantity.

There were imported into Boston,—			
In 1835,	531 packages,	amounting to	\$17,630
“ 1836,	362 “ “		10,450
“ 1837,	31 “ “		1,860
Total value,			\$30,040

This amount constitutes but a small portion of the whole consumption.

The teasels raised in this country are esteemed inferior to the best German teasels, and command a much lower price. A manufacturer of great experience, both in Europe and in this country, states, in a letter with which I have been favored, “ that for a woollen factory the teeth must be full and strong ; the color, *green-yellow*. When the teasel is yellow, it has been cut too late ; and is consequently too ripe and not good. The core must be full ; if empty or decayed, it is diseased. The kind denominated Rouaner is esteemed in Europe the best quality ; they are far superior to those grown in Avignon in France. If the teasel is quite green, it is not good ; as the teeth run all one way, and do not come back, as they have not had sufficient sun. If too yellow, they are too ripe, and their strength is lost ; and the teeth break off and become useless, after being used three or four times ; but the good ones, *green-yellow*, can be used twelve times on one side, then turned and used twelve times on the other side.”

I have the statements of three farmers familiar with the cultivation, whose estimates of the yield of an acre will be found to differ considerably from each other. This may arise from a difference in the cultivation, or in the assorting of the several qualities ; perhaps the one includes more in what he deems marketable, than the other. Of the farmer who reports the smallest amount, I only say, that his crop was beautiful ; and his teasels all assorted with the greatest care, being done up in separate bunches with neatness, and hung up separately to be dried.

He reports 85,000 to an acre. Another reports from 200,000 to 300,000. A third, 250,000 ; and states, that on three acres he, in one instance, obtained a crop of one million. In one instance, 30,000 were raised on one-sixth of an acre ; that is at the rate of 480,000 to an acre. The burr must be $1\frac{1}{2}$ inch in length, in order to be rendered merchantable. The manufacturer will buy those which are shorter,

but at an inferior price. The English divide them into three qualities : kings, middlings, and scrubs. The latter are saleable at a low rate.

They are a crop which requires two years to come to maturity ; and they are liable to be killed by the winter. The soil should be a deep, rich, moist loam. The cultivation should be as careful and thorough, as for any garden crop. The English speak of a clayey soil as being most favorable to this crop, and advise rather against high manuring. Our own cultivators are of a different opinion ; and say the ground cannot be made too rich. The crops with us are as large as the English crops ; but our cultivators often raise a crop of carrots between the rows of teasels.

The plants are sowed in rows, eighteen inches apart ; and the plants are thinned to a distance of four inches in the row. They are to be kept as clean as possible ; and in the spring every other row is to be taken up and the plants left a foot apart in the row ; those which are taken up may be transplanted. The transplanted roots are by no means so productive as those which remain where they were sown.

Teasels are deemed very good when they yield twenty burrs to a stalk ; fifteen is considered a good crop. A careful farmer in this county often gets fifty ; but his cultivation is very skilful. They are to be gathered soon after the blossoms fall and while green, excepting what are reserved for seed. An industrious man will cut six thousand per day ; ten thousand are sometimes cut, but it is an extraordinary day's work.

The teasels are liable to be killed by winter, or rather by thawing and freezing in the spring ; particularly from the snow-water freezing in the heart of the plant. The snow, therefore, in the spring, is to be carefully cleared away from the plant. The plants require to be protected in the winter by a covering of hemlock branches. Straw is often used ; but it is apt to become a harbor for mice, which destroy the plants. A farmer at Stockbridge recommends scattering some grain among the plants, to divert the vermin from the teasels. He gives it further, as his opinion, that the chance of success in the cultivation is seventy-five in a hundred. The price has fluctuated in a most extraordinary manner ; but it is not likely to be so variable while the intercourse with Europe remains free. They are very extensively cultivated there. As they are somewhat a rare crop with us, I have

been thus particular in describing the mode of cultivation. At present prices, \$1 50 per 1000, under good cultivation, they will afford a fair compensation. The kind of seed is of great importance, and I have accordingly imported a quantity of the best German seed for distribution among our farmers. The best article can be raised at as little expense as an inferior plant ; and the value of it in the market is much greater. It is to be said in favor of this crop, that the high manuring and clean cultivation which it requires, make it an excellent preparation for wheat. The crop, if well cured and managed, is of a durable character ; and the farmer, therefore, need not sacrifice his product through any unfavorable fluctuations in the market.

5. FLAX.—I recollect meeting with a few patches of flax. The crop on an excellent farm in Sheffield gives usually about 400 lbs. of flax, and 12 to 14 bs. of seed ; and it may be cultivated on the same land once in four or five years. Under such circumstances, it is deemed a profitable crop. Farmers have yet to learn the great value of flax-seed, made into jelly, in fattening cattle. No substance of the same bulk and expense within my knowledge, is so fattening for neat cattle and sheep.

III. DAIRY HUSBANDRY.

I proceed to speak now of another of the great interests of the agriculture of Berkshire,—the Dairy.

The dairy business has always been a great business. For a time it gave way to the raising of fine wool, when the prices of that staple were high. Since the abatement of the demand for wool, with that caprice for which mankind always have been, and there is reason to think always will be remarkable, many farmers have sacrificed their flocks ; and are now giving their exclusive attention to the dairy husbandry. These changes, in matters so important as the dairy or the sheep husbandry involving, as they do, a considerable investment of capital, and many expensive fixtures, cannot be suddenly or frequently made without risk of serious loss and disadvantage.

The county of Berkshire is admirably adapted to the dairy hus-

bandry. Grass is every where abundant. The soil is suited to the cultivation of esculent vegetables in the highest perfection. Several increasing manufacturing villages, with their swarming population, require supplies from the farms in the vicinity. Besides this, the great mart of the country, the city of New York, is easily accessible. Most of the farmers in Berkshire can reach Hudson with their produce, by a journey of four to eight hours, and put on board the boats at four o'clock p. m., it is in New York by an early hour the next morning. The farmer usually allows two cents a pound commission for the freight and sale of his butter ; and, upon other produce, it is equally reasonable. He does not return from the river empty ; but carries home a load of plaster, or of articles of necessity for his family. The great roads to the river, after the hills are surmounted, are among the best in the whole country. The rail-road, already open from Hudson to West Stockbridge, will afford to many of the farmers all the facilities they can desire for reaching the Hudson river.

PRODUCE AND EXPENSES.

1. *Egremont*.—I will, in this place, state, as an example, the operation of a farmer, who resided about twenty-five miles from Hudson. The great object of his attention was the making of butter, which was sold every week in the New York market.

From 18 cows he sold 2400 lbs. butter, at 23 cts. net. With these cows he fed 17 spring pigs until October, whose average weight was 177 lbs. each, half of this pork, say 88 lbs., was to be credited to the cow. He is of opinion, that when pork is \$10 per 100 lbs., a cow will give at least \$8 worth of pork per year.

Cow, Cr.

133 lbs. butter, at 23 cts., (comm. paid,)	\$30 59
Pork,	8 00
	\$38 59

Cow, Dr.

Wintering,	\$12 00
Pasturing,	5 00
Salt,	25
Interest on \$25, 10 per cent. risks included,	2 50
	\$19 75
Profits of a cow,	
	\$18 84

It is understood, that no extra feed is in this case given to the cow ; and the butter and milk used in the family, it is supposed, will fully pay for the attendance. This is a fair profit ; but it is, as I think, we shall presently see, much less than it should be. No animal is better entitled to good keeping than a cow ; because none makes a more liberal return for all the extra kindness and feed and attention bestowed on her.

In another dairy, nine cows made 1550 lbs. of butter, and 300 lbs. of cheese.

Another dairy of twenty cows produced,—of butter, 500 lbs.; of new milk cheese, 4000 lbs.

In this town, two acres of land are deemed sufficient for pasturing a cow or fattening a steer. Twenty head of cattle, made up of cows and three year old steers, were fattened upon thirty acres of land.

The subject of dairy-produce is of such importance, that I shall give various returns and calculations. I omit names ; I should be glad to give them, and in a majority of cases it might not be disapproved ; but a fear of giving offence, or of being thought to take an improper liberty, or of interrupting that freedom of communication, which I wish should subsist between myself and the farmers, and which seems indispensable to the success of the survey, induces me to withhold them, save where permission has been explicitly granted, or the nature of the case renders it obviously proper. The statements, which I give, rest upon undoubted authority.

2. In *Otis*.—Twenty cows gave 5000 lbs. new milk cheese, for sale ; each averaging also 25 lbs of butter ; 600 lbs. of cheese were also used in the family.

Cow, Cr.,	
280 lbs. cheese, at 8 cts.,	\$22 40
25 “ butter, at 20 cts.,	5 00
Calf,	4 00
Pork, 26 lbs. at 6 cts.,	1 56
	\$32 96

Cow, Dr.

Wintering,	\$12 00	
Pasturing,	5 00	
Interest on cost of cow, \$15—10 per cent,	\$1 50	
Labor and attendance,	2 16	
		\$20 66
Balance in favor of cow,		\$12 24

3. *Lanesboro'*.—Sales from 12 cows :—cheese at 12 cts.; butter at 25 cts.; gross amount, \$600. No account in this case is made of supplies in the family.

4. *Sandisfield*.—The average yield of a cow in ordinary seasons is rated at 250 lbs. with common keeping. By extra keeping, the quantity is increased to 350 or 400 lbs. The quantity of butter in addition, to each cow is supposed to be from 40 to 50 lbs., where new milk cheese is made.

The amount of cheese made in Sandisfield, in 1837, was estimated by a most competent authority, at 300,000 lbs.

Another farmer, with a dairy of 15 cows, states the average product of a cow, if she raises her calf, at 250 lbs.; if otherwise, 300 lbs.; and 25 lbs. butter also, from each cow. Four hogs may be kept to 20 cows. In this way, weighing 100 lbs. in the spring, they will weigh 300 lbs. in the fall. 140 lbs. of pork is to be credited to 5 cows.

The cost of wintering a cow here, is rated at \$10 ; pasturage, \$4. A good dairy woman will take charge of thirty cows, with assistance in milking and in handling cheese. Her wages will be \$1 50 per week, with board.

5. In *Tyringham*, the average yield of a cow is reckoned at new milk cheese, 283 lbs., and butter at the same time, 57 lbs. A dairy of 28 cows gave 7912 lbs. new milk cheese, and 1600 lbs. butter. A large amount of pork was fattened on this farm ; but it is difficult to say what portion of it is to be credited to the dairy.

6. In *Sheffield*, the average product of 28 cows was 394 lbs. new milk cheese, and 50 lbs. of butter each.

The product of a cow is thus stated by this excellent manager :

Cow, Cr.

400 lbs. new milk cheese, at 8 cts.,	\$32 00
Calf, (killed at 3 days old,)	1 00
50 lbs. butter, at 16 $\frac{2}{3}$.,	8 33
Whey and butter-milk, make one hundred lbs. pork,	8 00
	\$49 33

Supra, Dr.

Winter keeping,	\$12 00
One acre of land costing \$50 will pasture the cow,	3 50
Salt 25 cts., 3 bs. bran \$3,	3 25
Int. on the value of cow at \$25, 10 per ct.	2 50
Labor of milking, making butter, cheese, &c.,	4 00
	\$25 25

Balance in favor of the cow,	\$24 08
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The quantity of land estimated for pasturage in this case seems small. It must be small for a general rule ; another farmer in the same town assured me that he kept one yoke of oxen all the season, and one horse half the season, on two and a half acres of land, which he showed me. The land had been greatly benefited by plaster.

7. In *New Marlboro'*, the yield of a cow is estimated at 300 lbs. new milk cheese ; 4 hogs are kept to 20 cows ; 2 tons of hay are deemed requisite for a cow ; value of hay sold \$10 ; but if the farmer can realize \$6 per ton for it used on the place, he deems it better than to sell it. Eight to ten acres of land here, with the use of plaster, is deemed sufficient for the pasturage of four cows.

8. In *Great Barrington*, 9 cows produced 1900 lbs. new milk cheese and 800 lbs butter. In another case from 8 cows were sold of butter 200 lbs., of new milk cheese 1225 lbs. In another case 5 cows through the season, and an additional cow half the season, from 1st. June to 10th Nov., produced 651 lbs. butter—and 200 lbs. new milk cheese. In this case the weekly returns were given. The same farmer says, that his cows will average one pound of butter per day through the season. He states his cow account thus :

Cow, Cr.

200 lbs. butter at 20 cts.,	\$40 00
Calf raised,	2 00
Buttermilk, and skim milk for pork, equal to all the care,	\$42 00

Supra. Dr.

Wintering, 2 tons of hay,	\$16 00	
Pasturing, 25 cts. per week, 26 weeks,	6 50	
Int. on cost of cow \$20 at 10 per ct.,	2 00	
		\$24 50
Profits of a cow,		\$17 00

9. In *Alford*, the actual yield of a cow was as follows :

Butter, 240 lbs. sold.

Cheese 100 lbs. do., besides using what milk and butter were required by two persons. She had her own skimmed milk, but no meal or grain. She consumed, as ascertained, two tons of hay ; and her pasturage was 25 cts per week.

10. In *West Stockbridge* the report given is 300 lbs. new milk cheese to a cow ; \$40 are often obtained from a cow ; \$30 are deemed an average yield.

11. In *Stockbridge*, the proceeds of a dairy of twenty cows are thus given :

20 cows.	4000 lbs. new milk cheese sold at 9½ cts.,	\$380 00
	1000 lbs. skim milk, " " 6 "	60 00
	600 lbs. butter, " " 25 "	150 00
		\$590 00

This gives \$29 50 cts. to a cow.

No account is made in this case of the supplies of the family, nor of the amount of pork fatted, both which items would greatly have increased the result.

12. In *Lenox*, the return of a dairy of 15 cows, was of new milk cheese 1200 lbs. ; of butter 1800 lbs.

The return of another dairy is as follows :

10 cows produced of butter 1120 lbs. 8 oz., sold at	
18 cts.,	\$201 69
“ “ cheese, 800 lbs. sold at 9 cts.,	72 00
	\$273 69

13. *Tolland*.—From a highly intelligent farmer in a town adjoining the county, Tolland in Hampshire co., I received so particular an account of a dairy, that I shall here insert it, though it might be thought to come more properly under the report of another county.

15 cows produced 4500 lbs. cheese, sold at 9 cts.	
per lb.	\$405 00
and 509 lbs. butter sold at 19½ cts.	99 25
	\$504 25

Fifteen cows will nearly fatten 4 hogs, weighing in the spring 20 lbs. each ; in the fall, 240 lbs. each. In this case it is deemed proper to credit the milk with 140 lbs. weight of each of these swine ; 140 lbs. + 4 are equal to 560 lbs. pork at 8 cts. = \$44 80—this divided by 15 gives to each cow a credit of \$2 98⅔ cts.—

Butter and cheese 504 25, add pork 44 80 = 549 05.

The proceeds of each cow is \$36 60⅓—add calf and

rennet \$1 00, \$37 60⅓,	\$37 60⅓

Expenses.

Wintering a cow, usual charge,	\$90 0
Pasturing do. \$6 50, salt 50 cts.,	7 00
Interest on the value of a cow \$23 at 10 per ct.	2 30
One woman will manage the milk of 30 cows,	
Her wages \$1 50 per week, 28 weeks, her board \$1	
per week	
Wages and board for a dairy of 30 cows would be \$70,	
or \$2 33 each,	2 33
Additional help in milking and turning cheese 67 cts.,	67
	\$21 30
Profits of a cow,	\$15 30⅓

No account in this case was taken of the butter and milk used in the family ; but supposed to be not less than 150 lbs. of butter.

14. *Cheshire* is devoted almost exclusively to the dairy husbandry ; and has been celebrated for the excellence and abundance of its produce. For the goodness of their cheese, however, I must rely upon authority. Its appearance in some of the dairies, which I examined, bespoke careful, neat, and skilful management.

A farmer with 25 cows, states their average yield at 300 lbs. cheese, and 20 lbs. butter to a cow. He says likewise that 1500 lbs. pork are to be credited to his cows.

The average cost or value of his cows is \$30 each ; wintering \$14 ; pasturing 26 weeks, \$6 25 ; he raises some calves upon whey. It requires the whey of two or three cows to raise a calf. His hogs at 18 mos. average 350 lbs. ; they run in a pasture and have the refuse of the dairy until about six weeks before it is intended to kill them, when they are shut up and fed with corn and meal. A shrewd farmer observes, that, where swine in this way run in a pasture, it should be laid down as a rule, to have their trough always wet or always dry. This means that they should have as much whey as they are disposed to eat ; or, by being kept wholly without any, they should from necessity get their living in the pasture. They require quietness of mind and freedom from restless desires in order to thrift ; and they are like other epicureans whom variety and abundance render fastidious.

The dairy of another farmer consists of 20 cows. The year before last they yielded 400 lbs. new milk cheese ; the last year 400 lbs. each, besides an ample supply of butter for the family. He calculates upon the proportion of one hog to four cows ; with the above cows he made 1200 lbs. of pork, 600 lbs. of which he credits to the cows ; he deems 3 acres necessary for the pasturage of a cow. His cows during the spring, have an allowance of rye meal and whey.

In another case the produce of 23 cows was 12,000 lbs. new milk cheese, and 500 lbs. butter.

Another case from 11 cows including 4 three-year-old heifers, there were sold and used 3475 lbs. new milk cheese, and 403 lbs. butter. Three hogs were likewise fatted ; and it was considered that 400 lbs. pork were to be credited to the cows. Two tons of

hay were required for the wintering of a cow, valued at \$8 per ton ; or she might be kept for hire at 50 cts. per week.

In another case 30 cows made 14,000 lbs. new milk cheese ; and 500 lbs. butter. In this case some calves were raised ; but most of them were killed at four days old. Throughout the county of Berkshire this mode of dealing with the calves is termed " deaconing " them. What is the particular propriety of this provincialism, I am unable to determine ; and whether it had its origin in any superstition among the aborigines or the first settlers of the county, I shall leave to the antiquarians to ascertain. It is a peculiarity, and prevails nowhere else.

The practice, with this farmer, is to give boiled corn in the ear to his cows ; perhaps a dozen ears to a cow per day. When it is conveniently had, he gives a mess of rye meal to each cow, at the rate of two quarts per day, for three weeks in the spring. He is anxious to let his cows go to the grass as soon as the ground is bare. He thinks cows are liable to suffer from excessive feeding in the barn.

The wintering of a cow requires $1\frac{3}{4}$ ton of hay, . . .	\$14 00
Pasturing, 20 cts. per week for 26 weeks, . . .	5 20

In 40 days of the best of the season on this farm 30 cows produced 4000 lbs. butter. The land required for the pasturage of a cow is considered to be three acres.

From thirty cows, an average of 425 lbs. of cheese has been produced to each cow, and ten lbs. of butter ; or 300 the whole.

On one farm, where 18 cows were kept, 11,385 lbs. new milk cheese were made in a season, which gives the extraordinary average of $632\frac{1}{2}$ lbs. to a cow. 200 lbs. of butter were made the same season from the same cows. One of these cows produced 1000 lbs. new milk cheese.

During the first part of the season, for two months, two quarts of rye meal were given to each cow. Half of this quantity of meal was given them for one month during the last of the season ; and the greater part of the time they had their whey. 1000 lbs. pork were made on the farm ; and half of this was credited to the cows.

The same individual, when on another farm in South Adams, with twenty-one cows, made 626 lbs. new milk cheese to a cow, in a

season. 1700 lbs. of pork were raised in connexion with the dairy. Half the pork was considered due to the cows.

The process of making cheese began the 25th April, and ended the 1st December. As soon as the cows calved, the cows received 3 qts. of meal per day each—principally rye, with some Indian; and each had some whey, though not half what was yielded was given to them. Three or four of the cows received meal all the summer. He commenced feeding again with meal on the 25th July, and continued to give them two quarts of meal until the 25th of August. On the 25th of August, he began feeding the cows with corn-stalks until 10th September. Then the cows had the after feed of the fields; and from the 1st October, these cows had half a load of pumpkins per day. In November, fed every cow fully with meal; two and three quarts per day until 1st December. After that, the cows had nothing but hay until spring. From the same cows, at the same time, butter enough was made, and milk enough used, for a family of six persons. The cheese sold in New York for \$10 per 100 lbs.

These products are certainly remarkable, and show what may be done by attention, skill, and good treatment of the animals under our care. The pasturage in Cheshire is of an excellent description. The soil is generally of a rich gravelly loam resting upon limestone, and abounding in vegetable mould. It is likewise sensitive to the application of plaster, which is very commonly used.

IV. DAIRY STOCK.

The farmers are unanimous in their preference of the common native stock of the country, in which the Devon blood predominates, to any foreign stock with which they are acquainted. They are in general as decided in their preference of small, over large-sized cows. They are not, however, raisers of stock; and buy their cows wherever they can find them, according to their best judgment. The remarkable produce, if so it be considered, is to be attributed to extraordinary good management and keeping; and on this account, deserves the more attention, as showing what may be done.

The dairy stock in England which seems to have the preference over all others, is the Ayrshire. The origin of this stock is not well ascertained; but though it has some of the qualities of the improved Dur-

ham, it is a race distinct from that. Great pains have been taken and great expenses incurred, in order to introduce this fine Ayrshire race of cows into our state, by the Massachusetts Agricultural Society, and by an intelligent and public-spirited friend to agricultural improvement in Watertown. I regret that I am not able to obtain such returns as would enable me to speak confidently of the merits or defects of this stock, so far as these cases go ;—but I am safe in saying, that some slight disappointment has been experienced. It is probable, from the celebrity which they had obtained abroad, too much was expected from them here. Extravagant statements have been made respecting their produce in Scotland. One of the advocates for this stock, and a man upon whose authority great reliance is placed, has undertaken to calculate precisely the number of quarts of milk given, and the number of pounds of cheese made from what is stated to be in money the average produce of an Ayrshire cow. This is certainly rather a loose way of reaching the result. Entire reliance cannot be placed upon it. This, another distinguished Scotch farmer and dairyman admits ; and says that “those statements are far too high and not well founded.”

He refers to a farmer, on whose exactness he entirely relies ; whom he pronounces a man of superior intelligence and accuracy ; and who has devoted himself to dairy husbandry ; and, farther, whose stock were particularly select, and “who had every inducement to keep them in the highest condition requisite for giving the largest product in milk.” The farmer referred to, states, that at the best of the season the average milk from each cow is 9 Scots pints ($4\frac{1}{2}$ gallons), and in a year, 1300 Scots pints or 650 gallons. A Scots pint is two quarts. Now, allowing these cows to be in milk 320 days, the average yield of a cow would be $8\frac{1}{2}$ of a quart per day. But if we understand this to be wine measure, which is the usual standard of measurement in England, and compare it with our customary admeasurement of milk in Massachusetts, which is always beer measure, we must deduct one fifth ; and then the average product of an Ayrshire cow, compared with ours, is $6\frac{1}{2}$ qts. per day for 320 days. Such a yield is often surpassed by cows of our native stock. I have before me the case of a cow of native stock among us, who, in 268 days, yielded 2923 beer qts. of milk ; and of another, that produced 3975 beer qts. of milk in ten months. I can produce, within my own knowledge, a list

of nearly fifty cows of native stock, almost as productive as these. I do not mean to undervalue the imported stock. Far from it. I deem the introduction of the Ayrshire stock and the improved Durham short-horn, a great benefaction to the country. Their tendency to fatten, their early maturity, their beautiful proportions, highly commend them to our good will and our interests. As yet, we have not had, by any means, a sufficiently fair trial of their dairy properties so as to determine fully, either for or against them ; and it has been found here, in repeated instances, as it has proved abroad, that a cow, from a cross of an improved Durham, with the Devon, has given a valuable animal for the dairy. But among the great advantages which is to result from the introduction of this improved and beautiful stock, is this : to give our farmers a knowledge of what can be done by skill, intelligence, care, selection, and perseverance in the art of breeding animals for any purpose ; in obviating defects of form, constitution, and habit ; and in perpetuating and transmitting excellent and desirable properties. In the Ayrshire stock, and in the improved Short Horns, the most shrewd and persevering efforts have been exerted, and the highest practical skill and philosophy have been taxed to carry this race to as great a degree of perfection as any thing of the kind can be ; and the success has been decisive and wonderful. Excepting in one instance, to which I shall hereafter refer at large, perhaps there cannot be found in the whole of New England, a single instance of any enlightened, determined, and systematic attempt to form a race of animals of particular and desirable properties. It is most important that this should be attempted in different parts of our country, with what are called our native stock, who have become, in various ways, so crossed and mixed up, that there is in truth no particular race among them. A large portion of them are as ungainly, unthrifty, and unproductive as can well be represented or imagined. Yet there are among them so many extraordinary animals,—extraordinary for their produce in milk, butter and cheese,—that a few years of careful and intelligent selection from the materials already to our hand, and a strict observance of those philosophical principles of breeding which are well ascertained and understood, would undoubtedly give us a breed of animals, a stock or race of animals, greatly superior to that which now exists among us. This has been attempted in one instance by a highly intelligent breeder among us ; and he is now able

to show three generations of animals of as extraordinary character for the creamy or butyraceous quality of their milk, as has ever been known. Two quarts of what is called the strippings, the last part drawn off of the milk of one of these cows, having repeatedly produced one pound of butter; and the cream, as it came from the pans, as I have seen myself, becoming by churning converted into butter of the finest description in less than one minute by the watch; and this process repeated at pleasure.

Let us now compare the amount of cheese made by the English dairies, with some in this county of which I have here given an account.

An Ayrshire cow, it is said by the English authorities, will yield 257 lbs. butter per annum, or about 5 lbs. per week, all the year round, besides raising the calf; or of new milk cheese, about 514 lbs. There returns are certainly large; but they rest upon a calculation of the quantity of milk, which the cow is supposed to yield, rather than upon any account of an actual yield. None at least is given. This, therefore, is not so satisfactory as it would be, if it were a precisely ascertained result. One of the best authorities says, that in England, "a well-fed cow of a good breed will produce, upon an average, 180 lbs. of butter in the season. The common calculation is indeed 150 lbs.; but this is made upon mixed stock, which affords no certain data. In the Epping district, where there is an indiscriminate mixture of Devon, Suffolk, Leicester, Holderness, and Scotch, the calculation, in a well-managed dairy amounts to 212 lbs.; that is, 6 lbs. per week during 26 weeks, and 4 lbs. per week, during 14 weeks. The average product of cheese in the best dairies, where the whole milk and cream are used, cannot be estimated at more than 4 cwt.—that is, 448 lbs. On deep grazing soils, that carry a heavy stock, a well-managed cow is reckoned to make from three hundred and sixty pounds to six hundred pounds. In Somersetshire, the average is $4\frac{1}{2}$ cwt., or 540 lbs.; in Essex not so high, and in the midland counties something more than 3 cwt." It will be seen, in looking back upon the dairy returns in some parts of this county, that they are inferior to these, not frequently passing beyond 250 or 300 lbs. of new milk cheese. On the other hand, the returns of some of the dairies in Cheshire show an actual amount of annual produce of more than 500 lbs. to a cow, and in some cases 627 and 632 lbs. It may be said,

that this is owing to the fine pasturage which is to be found in Cheshire and its vicinity ; to the particular care which is taken of the cows ; and the system of high feeding adopted. But it shows conclusively that the cows are capable of being brought to this productive yield ; and the feed and management are matters which can be adopted any where.

V. AMOUNT OF DAIRY PRODUCE.

This matter of the dairy is an affair of such great agricultural importance, that I deem it best to go more at large into it, though I must here refer to some facts, which properly belong to the report of other counties. To evince fully the importance of this interest I have been at pains to procure, with as much accuracy as possible in the case, the actual produce of this branch of husbandry in two or three towns, and here give it to the public. It will be understood, that this is independent of supplies of butter consumed in the families, of which no account was kept, and for which, therefore, nothing is credited.

The first is the account of the produce of the town of Cheshire, for 1838. The number of cows kept, the pounds of new milk cheese and skim milk cheese made and sold, the amount of cheese used, and the amount of butter sold are all given. I have the names of all the farmers, whose produce is here reported, but deem it most acceptable to these gentlemen to withhold them.

1. *Cheshire.*

DAIRY PRODUCE OF CHESHIRE, FOR THE YEAR 1837-8.

Farms.	Number Cows.	New Milk Cheese sold.	Skim Cheese.	Cheese used.	Butter sold.	Farms.	Number Cows.	New Milk Cheese sold.	Skim Cheese.	Cheese used.	Butter sold.
1	14	lbs. 4500	lbs. 200	lbs. 150	lbs. 300	23	26	lbs. 7500	lbs. 200	200	lbs. 700
2	20	6000	200	150	500	24	30	10,000	200	300	700
3	11	4000	100	100	200	25	18	4500	300	300	500
4	4	1000	.	100	200	26	18	5000	200	150	500
5	25	8000	300	150	300	27	25	9000	200	200	300
6	7	1500	.	300	300	28	10	2000	200	200	300
7	28	10,000	300	300	300	29	15	3500	200	150	400
8	10	4500	150	100	150	30	20	4000	500	500	300
9	14	4500	100	100	200	31	20	4500	300	200	500
10	30	15,000	500	150	500	32	28	9000	500	150	700
11	29	12,000	1000	300	1000	33	10	2500	.	500	200
12	15	4500	300	100	300	34	49	15,000	500	500	1000
13	30	14,000	500	200	500	35	10	2500	.	200	300
14	30	10,000	500	200	500	36	20	7000	500	200	500
15	7	2500	.	100	200	37	26	8000	300	200	500
16	20	8000	.	200	300	38	20	6000	300	200	500
17	20	7000	200	200	200	39	20	6000	300	200	500
18	14	3500	500	200	500	40	28	8000	300	200	500
19	10	3500	.	200	200	41	10	2500	200	150	200
20	30	11,000	500	300	500	42	28	9500	200	200	500
21	28	10,000	500	200	500	43	28	9500	200	200	500
22	18	6000	200	200	500	44	20	6500	200	200	300
	414	151,000	5050	4000	8150	45	20	7000	200	200	500

The return from Cheshire the past season 1838-9 embraces only the principal dairies, as it was not in my power to obtain a more complete return. This gives 270,500 lbs. of cheese; but there is no reason to suppose there has been any falling off.

2. *Peru.* The return I have from Peru of butter and cheese made for sale in that town in the season of 1838, is of cheese 30,000 lbs., of butter 13,000 lbs. The town of Peru has a population of 650, and its principal husbandry is the raising of wool.

3. *Sandisfield.* The quantity of cheese produced in Sandisfield in 1838, for sale is estimated at 300,000 lbs. Sandisfield has a population of 1493. From other towns in the county, though returns were promised, I have been unable to obtain any but such as are wholly conjectural.

A farm in South Adams last year produced more than 16,000 lbs. new milk cheese.

I hope it will not be deemed inconsistent with the proper gravity of my report, if I here refer particularly to an individual case of dairy farming in this vicinity, which much interested me, and holds out a beautiful and encouraging example of the success of industry, perseverance, frugality, and good management.

This farmer has now a dairy of 24 cows; and they produce a cheese per day, weighing about 100 lbs. Supposing that it requires a gallon of milk to produce one pound of cheese, this would give 400 quarts of milk per day, or at the rate of 16 2-3 of a quart to a cow. These cows are all of native stock; most of them raised by himself. His average product of new milk cheese to a cow in a season, is between 500 and 600 lbs. Last year the actual yield was 598 lbs. to a cow. Of his 24 cows last year, two were heifers of two years old, just come in. Four years since he was the owner of a cow, whose milk in the best season amounted by actual weight to 70 lbs. per day. During the time of her greatest yield, she was fed with four pails of cheese whey, and some rye meal. She was of native stock. This farmer has a heifer from her, which gives, as he supposes, 60 lbs. of milk per day. He gives an opinion, which from his successful experience certainly deserves attention; that heifers which "come in" with their first calf at two years old, do better than when their coming in is delayed until three years old. Their milking properties are in this way improved. Probably he is right in this matter; but the general

experience of the best farmers recommends that, if a heifer comes in at two years old, she should not be allowed to have another calf, under at least eighteen months from this time.

The establishment of this farmer is substantial and independent. As far as the common comforts of life are concerned, little more seems to be desired. Good air, good water, plenty of bread, plenty of fuel, plain and substantial clothing made by the hands of his own family, and the product in a great measure of their own flocks and fields; an estate which he can call his own with truth, because it has been purchased not by fraudulent speculation upon other people's earnings, but by the healthful toil of his own muscles and the sweat of his own brow; luxuriant pastures filled with those beneficent animals, who are nourished by his kindness, and settle their bills in the most honorable manner every night and morning; and a clean dairy room of ample dimensions and exemplary neatness, with its numerous shelves, loaded with the richest produce, and speaking as well for the in-door as the out-door management; these features combined in this picture, present one of those beautiful examples of rural independence, and the bountiful rewards, with which a kind Providence is pleased to crown industry, frugality, and good management, with which I am happy to say the County of Berkshire is everywhere sprinkled over, even on its high mountain summits, as well as on its fertile alluvions, and in its peaceful and secluded vallies. The independent proprietor of this establishment is now sixty-six years old. At the age of nineteen he was not the owner of a dollar. He now admits himself worth thirty thousand dollars; and all this, with the exception of less than fifteen hundred dollars, is the produce of his own farming industry, as he has never been engaged in any speculation whatever. A higher good than all this is found, in the fact which he added with an honest pride and an enviable pleasure, that he had brought up eight children in habits of honest industry; and not one of them had ever disgraced his parents.

The standard of dollars and cents is a very imperfect standard, by which to measure the prosperity of such a man. It is a prosperity which money cannot purchase, and money cannot measure. It is a prosperity flowing from deeper, purer, and more enduring sources; from a competency for the evening of life, earned by honest labor; a mind unembarrassed by the fear of want, and the vexatious ca-

prices of trade and speculation ; and a grateful sense of the kindness of that just and beneficent Providence, whose blessings have rendered his peaceful and unpretending labors successful.

VI. NEAT CATTLE.

Of the neat cattle of the county much might be said in praise. Yet they are of no particular denomination, but intermixed with many accidental varieties. The North Devon stock mainly prevails throughout New England. Different varieties have been introduced, and crosses have been made in some instances with obvious advantage ; but, as before remarked, intelligent, systematic, and persevering attempts at improvements in a breed, have not been made within my knowledge on any extensive scale in Massachusetts, save in one case, to which I shall presently refer more in detail.

1. EXTRAORDINARY COWS. I shall give an account of some remarkable animals which have been found among what are called our native cattle. It is not pretended that they constitute a distinct race or characterize a particular class of animals ; but they show at least what materials are within our reach, upon which to build a stock of high character.

A cow of Samuel D. Colt of Pittsfield, from 1st December to 27th April, 148 days, produced 193 lbs. of butter.

A cow owned by R. Campbell of Pittsfield, has yielded 26 beer quarts of milk per day.

A cow owned by Hosea Merrill, gave 30 beer quarts of milk per day.

A cow owned by D. Fenn of Stockbridge, 8 years old, produced in one week 12 lbs. 9 oz. butter. During the same time, 10 quarts of the milk were sold, and in addition cream and milk were used freely in the family.

A cow owned by Calvin Davis, 4 years old in the spring of 1838, in 172 days produced 225 lbs. butter, and fatted a calf. An accidental injury to the cow, prevented a continuance of making butter.

Two cows of Wm. Dewey, of Alford, in good season, averaged for a length of time, 14 pounds of butter each per week.

A cow belonging to the late Dr. Hyde, of Stockbridge, for some time produced fourteen pounds of butter per week.

Two cows in Vandeusenville, produced 14 lbs. of butter each per week.

A cow belonging to — Millard of Egremont, produced 14 lbs. of butter per week.

From two cows belonging to Russell Brown, in Cheshire, besides the free use of milk and cream in the family, 90 lbs. of butter were produced and sold in three weeks, and in four successive weeks 114 lbs.

A cow owned in Stockbridge, by Stephen Willard, produced as follows :

In 321 successive days 331 lbs. butter.

“ 284 “ “ 293 “

“ 306 “ “ 318 “

911 days

942 lbs.

“ The above is exclusive of 25 lbs. made while fattening three calves.” He adds “ my method of keeping has been grass only, from spring to fall. In the fall I begin with pumpkins and potatoes, and feed moderately during the time she gives milk. An account has been kept for only three years ; but it would not vary much from the above, for the twelve seasons I have had her, except the present season she has been farrow.” This cow is now eighteen years old, “ and will calve again about the middle of February.”

Two cows owned in Pittsfield, produced each 50 lbs. of milk per day ; and one other 32 lbs. at a milking.

A cow owned by Thomas Hodges, in North Adams, produced last year 425 lbs. of butter ; 400 lbs. of this amount were made in nine months. Her feed consisted of one quart of rye meal, and half a peck of potatoes per day ; and very good pasturing.

To this list I will add the case of another cow, in the neighboring county, whose product must be considered as quite extraordinary. She is owned by Joseph F. Upton, of Ashfield. Franklin Co.

From the first of April, 1837, to the middle of February, 1838, her product was 335 lbs. 15 oz. From the 9th of May, 1838 to

the 28th December, 1838, she had produced 303 lbs, 3 oz. of butter, and was still making at the rate of one pound per day.

The owner adds, "In the year 1837, I killed my calf at three days old, and gave my cow the skimmed milk through the summer. I commenced the first of October to feed on potatoes. I gave her about one peck per day boiled as long as she gave milk. In the year 1838, I fattened my calf and killed it at four weeks old. It weighed 75 lbs. She has had nothing but grass this year, until the first of October ; since then I have fed her with one peck of boiled potatoes per day. My cow is seven years old last spring." Her winter-keep at present, while giving milk is as much hay as she will eat, and one peck of boiled potatoes per day. These cows are all of native stock, without any admixture of foreign blood. The three cases of largest product certainly cannot be considered as examples of high feeding. It is extremely desirable that some skilful farmer, should by a judicious selection from such animals as these, endeavor to form an improved race for the dairy. I have already said that this has been attempted by one gentleman in the state.

Before I proceed to say what he has accomplished, I will mention an interesting fact, communicated to me by an observing farmer of Stockbridge. Thirty-two years since he became the possessor of a very productive cow ; and has continued the breed to this day. She has never produced a bad milker, and some of her descendants owned by other persons in the village do equal credit to their parentage. The yield of one of them, which came within my knowledge, is twenty quarts per day.

2. IMPROVEMENT AT TEN HILLS STOCK FARM ; Middlesex Co. The great improvement in dairy stock, to which I have referred, has taken place on the Ten Hills Stock Farm in Charlestown, near Boston, under the skilful and enterprising efforts of Samuel Jaques. This account might perhaps with more propriety come under the report of Middlesex ; but as intimately connected with dairy husbandry I shall give it here, even though I may be induced to repeat it in another form. Perhaps no man in New England or the country has more practical skill, or better judgment in relation to live stock than Mr. Jaques ; and his experience has been long ; and marked by careful and critical observation in those points to

which his attention has been particularly directed. I have the pleasure therefore of letting him speak for himself, suggesting only such observations as I may deem proper to be submitted. The great principles of breeding to an experienced and philosophic mind, are almost as well determined as the great principles of mechanics, chemistry, or any other branch of natural philosophy. The first and most undoubted of all principles is, that like produces like ; and farther, that good qualities and bad qualities are transmissible ; and as where two animals come together of peculiar merits, the good qualities are likely to be transmitted, so also where prominent defects or faults exist, these faults or defects are likely to descend and to become aggravated. This applies especially to breeding within the lines of consanguinity among all animals, the human not less than the brute races. It is therefore the great aim of the accomplished breeder, to make such a selection that the desirable qualities shall predominate on both sides ; and especially that animals having similar defects or bad properties, should not be suffered to mingle to the aggravation of these evils.

A distinguished statesman of Kentucky, as I learn from a private source, has given it as his opinion, that the milking properties of cows is much rather matter of accident than of breed ; and that we must despair of being able to continue and transmit this property with any confidence of success. With the highest respect for the agricultural skill and intelligence of that gentleman, I cannot accede to this opinion ; and it is directly contradicted by experiments made with the improved stocks in England and confirmed by several years' success. I know that it has become almost proverbial, that you cannot rely with certainty upon a good calf, because you breed from a good cow. But it is to be considered that few careful trials are made ; that the character of the sire from which we attempt to breed, if any thing, more important than that of the dam, is generally matter of indifference ; and we are unreasonable enough to expect a good calf, when we send our cows to any miserable runt that happens to be in our neighborhood ; that any substantial improvement of this nature, is seldom to be expected from a single cross, especially from animals, which are not themselves high bred, but merely if the expression be allowed, accidental individuals ; and that such improvement can only be expected by continued trials, and careful and successive experiments.

3. **CREAM-POT BREED.**—From an account of his enterprises and success, with which Mr. Jaques has favored me, I make the subjoined extracts :

“It has been my object to effect such an improvment in milch cows as should produce the greatest quantity of rich milk, affording the largest quantity of butter. There is a greater difference in pecuniary profit between a good or a poor cow than among any other domestic animals. In some yards, there may be found those which will not produce more than three pounds per week, and others that would make nine, and all on the same keep. As we sometimes hear of cows, which have produced seventeen pounds of butter per week, and even more, it occurred to me to inquire why a breed or race could not be formed with the same valuable properties. This I have attempted ; and have carried it to the third generation, and I am confident of success. I have a cow, whose milk has produced nine pounds of the best butter in three days ; and this on grass feed only. This I call my *Cream-Pot* breed. I have bred my cream-pots with red or mahogany-colored hair, yellow noses, with mahogany-colored teats, yellow skin, silky and elastic to the touch. I have obtained the breed by the cross of a Durham short horned bull on a selected native cow with certain extraordinary points and properties, anxious to retain as much of the form of the Durham, as to ensure capacious udders and with the valuable property of affording rich milk. Though an admirer of the Durham short horns, I have not found them producing so rich milk nor making so much yellow butter as I could wish. The Durham race are round and straight in the barrel, full in the twist, and inclining to be thick in the thigh. I have wished for some improvement in the form of the bag. But I would premise, that whatever I may say in respect to breeding animals, I only desire to express my own private notions, without a wish to dictate to any one, from the experience I have had, which, I am sensible, is very limited. Generally, cows, which I have examined, giving the largest amount of the richest milk, have had capacious bags, full behind, extending far up into the twist and also well formed ; hanging moderately deep when full in milk, and after the milk is drawn, quite the reverse, for I would avoid a fleshy bag. My Cream-Pot breed are full in the body, drop deep in the flank, are not quite so straight in the belly, nor as full in the twist, nor as thick in the thigh ; but in other respects I wish them to approach the Durham as near as may be.

My Cream-Pot breed excel particularly in affording a great quantity of rich cream, and that cream capable of being formed into butter in a short time, and with little labor, leaving a small proportion of buttermilk. Their cream produces more than eighty per cent. of pure butter ; and it is not infrequent to form the cream into butter in one minute. It has been done in forty seconds.

“I have a heifer designated as Betty Cream-Pot, one of the third generation, which produced her first calf at two and a half years old. Mr. Brown, my foreman, made the following experiment upon her milk, without my knowledge at the time. After milking, he took two quarts of her milk out of the pail, and having strained it into a pan, allowed it to stand twenty-four hours. Having then skimmed the cream into a bowl, he churned it with a table spoon ; and in one minute, by the clock, he formed the butter. It was then pressed and worked in the usual way, and amounted to half a pound of pure butter. After this the following practice was pursued for eight or ten weeks in succession. At each of four successive milkings, two quarts of the strippings were strained into a pan, making eight quarts in the whole. All was mixed together in the same pan, and then churned. The average time of churning did not exceed ten minutes ; in some instances the butter was formed in five minutes. After being properly worked over, it was weighed and never fell short of two pounds. The remainder of her milk was for family use, and, when set for cream, produced the usual quantity. These experiments were made on grass feed only. She did not give a large mess ; only about twelve quarts per day. I have forty cows and heifers, ten bulls and bull calves of different grades of this cream-pot breed, all bred and raised by myself. I keep my bulls, selected as breeders, until I have proof of the quality of their offspring. My old cream-pot bull is ten years old. My Don Cream-Pot, from which I am now breeding with some of my cows and heifers, is three years old.”

It will be seen, that Mr. Jaques speaks with all the enthusiasm of an amateur. I cannot endorse, certainly to their full extent, all his doctrines respecting the power of breeding at pleasure, any animals of any desired shape or color, and of forming them as a statuary would mould his plaster ; but the approaches, which a scientific and experienced breeder can make to such a power as this are very considerable, as all the improved races of animals show, whether among neat cattle, horses, sheep or swine.

The dam of this stock was a noble sized cow, raised in Groton, Mass.; but the owner there knew nothing particularly of her origin. She was sold to a gentleman by the name of Haskins, residing in Dorchester, about five miles from Boston; and her cream was of such extraordinary richness, that it would become separated into butter by the motion of the carriage in bringing it into the city. The stock owned by Mr. Jaques is descended from this cow by a cross with the improved Durham short horned bull Cœlebs, imported some years since into Boston by a gentleman of that city, and owned afterwards by Mr. Jaques. This bull was without a pedigree; but it is said there is good reason to believe, that he was a regular descendant from Mr. Collins's celebrated bull Comet. The bull now owned by Mr. Jaques is a son of his by the daughter of the Haskins cow, which was also the daughter of Cœlebs.

Mr. Jaques is entitled to great credit for his care and judicious selection in continuing and improving the stock. I have repeatedly seen the cream from these cows; and its yellowness and consistency are remarkable; and in company with several gentlemen of the Legislature, I saw a portion of it converted into butter with a spoon in one minute. The color of Mr. Jaques' stock is a deep red, a favorite color in New England. They are well formed and thrifty upon common feed; and, if they continue to display the extraordinary properties by which they are now distinguished, they promise to prove themselves, for dairy purposes, the most valuable race of animals ever known among us; and as remarkable as any of which we have any information. They have now reached the third generation; and maintain their high character.

From six cows taken promiscuously in a dairy of improved short horn stock, in England, with a view to test the quality of the milk, it was found that they gave in the following proportion of butter to one quart of milk:

No. 1, 3 oz. 6 dwts.	No. 4, 1 oz. 10 dwts.
2, 1 " 6 "	5, 1 " 14 "
3, 1 " 12 "	6, 1 " 6 "

These measures, it will be perceived, are given in Troy weight, of which it requires 175 lbs. to make 144 lbs. Avoirdupois. It is not stated, whether the quart was beer or wine measure; and it is there-

fore difficult to adjust the proportions. A variety of circumstances likewise would affect in some degree, the result, as whether the milk was taken at the beginning or the last part of the milking ; and how long the cows had been in milk from the time of calving ; and what was the kind of feed given them at the time of the experiment. Still, I have quoted the result, as under any circumstances, showing by comparison the extraordinary product of the cream-pot breed.

4. DAIRY AND SOILING IN WALTHAM, MIDDLESEX Co.—

There is another case of dairy management upon a small scale, which, though occurring in another county, and that not a grazing county, is of so remarkable a character, that it will be highly interesting in this connexion. The authority upon which it rests is unquestionable. It shows particularly what may be accomplished by proper management, in locations, which are comparatively unfavorable ; and by means within the reach of individuals, whose possessions may be very restricted.

In Waltham, Middlesex Co., a gentleman had four cows ; but not a rod of ground, which could be appropriated to pasturage. These animals were, therefore, never out of the barn or the barn-yard ; and were fed with grass mown for them ; with green corn fodder, which had been sown broadcast for this purpose ; and with about three pints of meal each per day. The amount of their produce was kept for thirteen weeks. Two of these animals were heifers of two years old, who had calves the same spring ; and the whole milk of one of them was taken by her calf during six weeks out of the thirteen. Some of the milk of the other was taken for family use, but the quantity not determined. Under these circumstances, these heifers could not be rated as equal to more than one cow of full age and milk. From this stock, however, thus circumstanced and fed, 389 lbs. of butter were made in the thirteen weeks. An additional pound would have given an average of thirty pounds a week for the whole time to a stock which must be in fairness set down as three cows only. This experiment was made in 1837.

5. RAISING CALVES.—

These statements will, I hope, stimulate the farmers in all parts of the state, and particularly where the dairy husbandry is pursued, to attend more than they have done to the

selection and improvement of their neat stock. Small hopes can be entertained of this until farmers get into the habit of raising their own calves. The high prices, which all kinds of stock have maintained for the last two years, has induced many more farmers to do this than formerly. In my opinion it ought always to be done where the stock from which you propose to raise the calves, is worth continuing. This can be done in the interior at much less cost than is generally supposed, if suitable measures are taken to effect it in the best manner.

A farmer of my acquaintance, in the interior, raises all his calves from a large stock of cows. His cows are known to be of prime quality. His heifers are allowed to come in at two years old, and are then sold with their first calf generally for thirty-five dollars, which he deems a fair compensation for the expense of raising. His calves are raised mainly upon skim-milk and whey, until they can support themselves on hay and grass. His steers pay a proportional profit, when sold at three to four years old.

The English authorities say, that upon two cows calving at different times, seven calves may be fattened for the butcher in the course of the year. More than this may be done if the calves are to be reared for stock ; and if some little addition of meal or vegetables is added to their feed.

Mr. Jaques remarks, on the subject of raising calves, that " he generally lets them take a portion of milk from the cows for about three months, and prefers keeping them in the stall until they are about a year old, thinking that he gets better forms, rounder barrels, straighter backs, greater broadness on the loin and hips, by this management. Calves turned to grass at two and three months old, become pot-bellied, their backs bent, acquire a narrowness in the loins, and seldom get over the defect entirely."

I believe that it is decidedly better to raise them in the stall or yard the first season, as their feed is much more uniform, and their growth not interrupted by sudden changes. They soon learn to eat hay ; and carrots or potatoes cut fine for them will be found highly beneficial. In all cases, the calf should be taken from the cow as soon after his birth as the cow's udder is brought into good condition and her milk fit for use ; and then should be fed by hand. " In my opinion," says a highly intelligent farmer of Stock-

bridge, "calves raised for other purposes than veal, should be early weaned from the dam; and nursed at least one year upon food, adapted to give firmness and expansion of muscle, rather than to fatten them." The observation of another farmer, a plain man, but one of the most observing and practical farmers in the state, is deserving of attention. "One of the most important points, says he, in the feeding of the calf, is to feed him well when the grass first fails in the fall by frost. If suffered to fall off then he does not recover, and suffers more by scanty food than other animals." I shall subjoin in the appendix a letter, with which I am honored, from an intelligent farmer of much experience in Braintree, on this subject of raising calves, which deserves particular attention.*

6. QUALITY AND MANAGEMENT OF DAIRY PRODUCE.—The quality of the dairy produce in Berkshire County perhaps deserves remark. Much of the butter is very good. I ate little however that could be pronounced of the very first quality. This is always a rarity and cannot be expected but with peculiar pains-taking. It is impossible to convince our people of this, excepting where they have sometimes tasted butter with that peculiar richness and deliciousness of flavor, which I know not how to describe, but by comparing it to the richness of the odour of a new blown rose, with all the dew drops glittering among its leaves. I have tasted such butter several times in Massachusetts; and therefore am certain it can be made; and I know that such butter would always command almost any price in the market. Something is in the cows. The milk of different cows is known to have very different tastes, and therefore it must have other different properties. Much is in the feed. It is well known that June butter, when the pastures are in all their luxuriance, and September butter, when the cows are turned upon the after-math, are generally of a superior quality to that made at other seasons. But I believe from the best observation I can make, it depends more than any thing else upon perfect cleanliness, a pure atmosphere in the milk-room; and especially upon the freshness of the cream, being taken early from the milk, and churned soon after being taken off. The salting too is of much moment; but the medicaments of saltpetre

* Appendix B.

and sugar, do not in my opinion improve the flavor, nor assist the keeping, of the butter. What is greatly wanted in Berkshire county is a spring house for keeping the milk. I do not recollect the occurrence of one ; but on account of the numerous streams with which the country is watered, and the chrystal springs which burst from the sides of all their beautiful mountains, no part of the country is more favorable to such establishments ; and in those parts of the county where the proximity to the Hudson furnishes immediate and ready access to the city market, the great consumer which is ready to absorb every thing that comes within its reach, a good butter dairy, where by means of a spring house for the milk, and plenty of ice for its transportation, the article might be sent to market in its best state, a good butter dairy would yield a handsome profit. For swine the buttermilk is probably worth twice as much as the whey of cheese. Of the cheese of Berkshire county it would be improper for me to speak ; as with me cheese is always contraband, and can under no pretence be admitted to the port of entry. Those who profess themselves judges, and men of taste in this matter, speak well of it ; and perhaps a better test of its goodness is to be found in the fact that it bears a good price in the market. It is sent to market in a very green state ; oftentimes when but three weeks old. The best English cheeses are not considered as ripe and marketable until two years old. The general rule of yankee thrift is, we believe, “ to turn the penny quick ; ” and to sell what you have to sell whenever there are to be found those, who are ready to buy it. This rule may produce the most money, but perhaps is not as likely to produce the best cheese. It is not however worth while in this world to dispute about tastes. Constitution, education, and habit make strange differences among us ; and when I found, as I did find, among the farmers in the neighborhood of Lowell, that by a class of customers in the city, their calves were spoken for as soon as dropt from the cow and the skin taken off ; and that by another class of customers, the *beastings*, that is the first drawings of the milk from the udder after parturition, were always bargained for beforehand, I was obliged to remember, without I hope a sacrilegious perversion, that “ all flesh is grass ; ” and have recourse to the old chemical philosophy, which resolves every thing into the four great elements, earth, air, fire, and water, only variously combined.

A great improvement is thought by some to have been made in capping the cheeses, as it is termed ; that is, as soon as they are taken from the press, covering them completely with cotton cloth sowed over them tightly ; or else drawn round the sides of the cheese and over the edges, leaving the centre partially exposed. Where the cheeses are covered entirely, the cloth itself is completely covered and saturated with the usual unguent of whey-butter and some simple and harmless coloring matter. The effect is to preserve the cheese against the attacks of flies ; and to render the daily turning of the cheeses not indispensably necessary ; besides preventing their spreading and cracking. It is said by some persons, that the cheese does not cure so perfectly in this way as when exposed ; and that the sale is not so ready. Such contradictory statements are made in this case, however, by those who have tried, and those who refuse to try it, that I cannot decide on its expediency. It impressed me favorably.

I found in use, in Sandisfield, a cheese-shelf of a simple construction, and suspended on a horizontal centre bar, in such a manner that many cheeses can be turned upon it by a boy, and at one operation. Bars are so placed that, in turning, the cheeses are prevented from falling out. The shelves are moveable, and those which have been used can be easily taken out and thoroughly cleaned and dried, until by another revolution of the shelves, they are wanted in their places. This is a cheap construction ; of great convenience ; and so useful, that I shall give a full description of it in the appendix.*

I have much pleasure in saying, that many of the Berkshire dairies are most exemplary in respect to neatness ; and in this matter present beautiful models of domestic management. There are exceptions, however, to this commendation. In some instances there is any thing but neatness. The sink and the pig-stye with all their offensive exhalations, on account of what is called convenience, which is only an apology, in such cases, for gross laziness, are in much too intimate proximity with the dairy-room ; and there are cases,—I shall not venture to say whether I saw them, or only heard of them—where, if the pigs should perchance mistake their own apartment and go into the next door, they would never suspect their error, un-

*Appendix C.

less they were ordered out. Admonition, however, seems lost upon such persons. Slovenliness and sluttishness are incorrigible vices ; and the fate of such persons seems, as it were, in despair of reformation, irrevocably pronounced.

VII. SWINE.

Of the swine of Berkshire county, there is little remarkable. I met repeatedly with a breed called the Mocho breed, which are much esteemed. I have found them in different parts of the state, but I can obtain no account of their origin. The Berkshire breed from England has been introduced into the county ; and will extend itself as soon as its merits are properly appreciated. It is the best hog that we have among us ; and when used as a cross with some of our small boned breed, such as the Byfield or the China, or the Mocho, the progeny is highly approved. In a cross with the grass breed, so common in New York, the produce is very fine. Beautiful samples of this cross have been produced on one of the best managed farms in Massachusetts, in Lexington, near Boston. The average size, at eleven and twelve months old, has been 300 to 350 lbs.; and with extraordinary care and feed they have been made to exceed 400 lbs. at ten months old. This early ripeness, in all animals designed for the butcher, is of great importance.

On the dairy farms, the raising of pork is extensively pursued, excepting where the whey itself is used for the cows. The expediency of using the whey for the cows or in preference of keeping swine, is a vexed question among the farmers, which I have no means of determining. One hog is usually kept to four cows. A shoat, weighing seventy pounds in the spring, kept upon the slops of the dairy and pasturage, and some meal or potatoes or both, may be expected, in the fall, to weigh 250 lbs.; and the farmers in general consider more than one hundred pounds of this produce as in justice to be credited to the four cows. This, I believe, is in most cases an underestimate. No article can be given to swine, so conducive to thrift as milk, or the slops of the dairy.

One of the best establishments for fattening swine I found in Great

Barrington. This farmer, whose whole management is excellent, fattened, the year before the last, twenty-four large hogs. The current year he has fattened twenty-five, and their average weight was 318 lbs.; total 7,950 lbs. His mode of fattening swine deserves attention. "As soon as the pastures will afford a good bite of grass, he turns them in where they can have plenty of clover and water. He is careful to salt them once a week, or oftener, if the season is wet; and changes them from one pasture to another, as he does sheep or other stock, which is of much importance through the summer. As soon as he gathers his harvest, he gives them the stubbles. When these are well gleaned, he gives them corn cut up by the ground for a few days, as it is dangerous to keep them closely shut up and feed them highly in the beginning; having no exercise, it tends to produce the blind staggers. In order to remedy this, they must be put upon thin feed and have as much salt as they will eat. He commences steaming potatoes for his hogs the first of October, his ruta bagas not being then matured; he mashes them fine; puts nothing with them but the sour milk from six cows, and four quarts of salt to a box of twenty-eight bushels. This feed he continues three weeks. Afterwards, he commences steaming ruta бага, and continues this feed until the first of December, which is five weeks. He puts with the ruta бага, after being mashed fine, four quarts of salt and three bushels of oats and pease ground together, into a box containing twenty-eight bushels. On this feed they do extremely well. This feed he continues until the 25th of December; and then finishes off with meal and corn." The free use of salt is unquestionably of much advantage.

A very successful fattener of swine in another county, whose authority in this matter is decisive, is in the habit of boiling corn in a large vessel and with the mixture putting in a few quarts of wood ashes. The proportions, I cannot exactly ascertain; but he considers its use once a day of great benefit to the health and appetite of his swine. He is careful likewise to put charcoal into their styes once a week. A finer stock of swine or a finer display of fattening swine I have never seen than I have seen at this farmer's place, which is certainly a conclusive test of the excellence of his management.

I have statements without number of the value of apples for feeding swine. In one case the gain upon raw apples was eleven pounds weight in twelve days; and in this case nothing excepting apples

was used. The best form of using them seems to be to boil them with potatoes ; and it is recommended by several farmers in this case to put the apples at the bottom of the kettle ; and the potatoes become thus impregnated with their flavor. This comparatively new use and value of apples may be pronounced a great discovery of the most beneficial character. Many farmers not accustomed to speak lightly pronounce them of equal value as potatoes for the fatting of swine, for milch cows, and for beef cattle. I can answer for the human animal. There is no food more healthful or more nutritious in reasonable quantities than apples cooked or raw. A dish of baked apples and pure milk is of all others the most delicious to the undulterated taste ; and the free use of apples and milk, in place of the miserable slops of tea and coffee, would give to the young bipeds of the family vigorous bodies and bright minds ; abate a large item in domestic expenses ; and prevent a taste for the two greatest and unalleviated curses with which humanity was ever visited, tobacco and rum.

I had intended in this case to have gone largely into the subject of the sheep husbandry, one of the most important interests of this county and of the state ; but I have determined to omit it here and treat it at large in my Report of Franklin County which will immediately follow this ; a county which like Berkshire is well suited to the raising of wool.

VIII. MANURES.

It must be admitted that little attention is paid to the subject of manures ; and that a compost heap is scarcely to be found from one end of the county to the other. The usual resources are ample ; but the raising of wool has in many cases prevented cultivation ; and the forming or accumulation of manures has therefore received comparatively little attention.

The mineral manures in the county are abundant ; for an account of which I must refer to the elaborate report of the Geological Surveyor on economical geology, published by order of the government the last year.

Gypsum is obtained abundantly at Hudson. It costs there about eight dollars per ton ; and can be delivered in most of the western towns in the county, in a prepared state at less than ten dollars. It is applied to grass land and pasturage at the rate of a bushel to an acre ; and in almost all cases with eminent success. Its effects are more observable on soils based on lime-stone and full of rich vegetable mould ; but it is of little efficacy on wet or gravelly soils.

A farmer of Pittsfield of great intelligence and experience, and whose successful husbandry is universally admitted, speaks strongly of the value of plaster when applied to grass in conjunction with manure. His own words are "spread the manure and then spread one and a half bushel of plaster on the manure. The effect is very great compared with the result when applied without manure." Two acres, which yielded only a single load, after this application produced two tons of hay to the acre.

A farmer in Stockbridge, speaks strongly of the great value of gypsum, when applied on fields which have been thoroughly manured by the folding of sheep upon them. It may be said this is the effect of the manure and not the plaster. His own careful observation leads to a different conclusion ; and he is of opinion that great benefit results from the combination. This is in conformity with the theory of Dr. Dana, and Professor Hitchcock in respect to the operation of lime in any of its forms.

The same farmer gives an account of an experiment of plaster applied to potatoes, by putting a table spoonful on the seed in the hill. One quarter of an acre thus managed yielded as much produce as half an acre not plastered in its immediate vicinity. These effects of gypsum, in respect to grass and cultivated crops, are confirmed by the experience of two farmers in his immediate vicinity, as intelligent and practical as are to be found in the state.

In Otis, ashes on moist land has proved unfavorable ; and repeated, has occasioned moss and barrenness. On dry lands its effects have been most beneficial. My business is with facts ; and on such a subject who can presume to speak with confidence ? As the ashes applied to wet land becomes immediately dissolved and active is it not the case that the vegetable is furnished in quantities, which the plants cannot take up, being filled to repletion ; or passes off in its dissolved state immediately into the sub-soil ?

In Sandisfield, a farmer whose premises and stock, bespeak skillful and excellent management, and whose fellow citizens have deemed him year after year, well qualified to assist in the management of the state farm, has found plaster applied alone of doubtful utility ; but plaster applied with manure highly beneficial. Ashes and lime intermixed with manure have proved very beneficial to pasture lands. Leached ashes have been applied with great success to land, which the year previous has been in potatoes and manured for that crop.

Two of the best grain farmers in the county in Sheffield, mix plaster with their manure to great advantage ; and are in the habit of applying ashes in the spring upon their winter grain. They plaster their corn on the hill twice in the season.

A farmer in Sheffield, whose husbandry is admirable, uses plaster to great advantage on all his crops ; and deems it of much importance that it should be applied early and just as the crops are coming out of the ground.

The marls found in the county have not as yet proved as efficacious as was expected. They have been tried upon potatoes, corn, and wheat, but with indifferent success. Some disappointment at first was not surprising both from inexperience in the mode of application ; and because from the nature of the substance a permanent rather than a sudden improvement was expected.

A farmer of Lee, whose observations are careful and intelligent, made various experiments with this substance. The marl, to which he had access, contained of soluble geine 2.6 of insoluble, 3.4 of phosphate of lime, 1.2 of carbonate of lime, 86.2 of granitic sand, 5.0 of water of absorption 1.6. The land to which it was applied was a rich gravelly loam. Of potatoes six rows through the whole piece were marled in the hill ; a shovel full in each hill. The rows above them were not manured. The rows below them were manured with barn manure. The first part of the season he considered the marled rows as decidedly the best. In August, when I went into the field, they were not so promising as those manured with barn manure ; and were not upon the whole better than those by the side of them without manure. He writes me since the harvest, "that he cannot say that he has seen as yet much benefit from his marl, though his potatoes were somewhat better for the use of it."

A considerable dressing of marl on grass ground on the same farm produced no perceptible results.

Its effects on his corn were not ascertainable as the whole field was marled equally. The growth was luxuriant and promising ; but, whether from the operation of the marl or the fineness of the season, he could not determine.

At Sheffield, on a small farm which exhibits a beautiful example of intelligent and successful husbandry, upon a soil strongly siliceous but abounding in vegetable mould, and based upon lime stone, marl was applied for the wheat crop. It was applied through the field in strips, and at the rate of 500 bushels to the acre. After the most careful examination that could be given to it before harvest, comparing the marled portions with the adjoining, which were not marled, we were unable to perceive any advantage or effect from its application. The result at harvest showed no difference.

The testimony every where is unanimous in favor of wood ashes, applied to cultivated crops, excepting on new land where it is not needed ; to wheat in particular. An extensive manufacturer of Pittsfield, states that " he has tried for several years with great success, the ashes from his iron furnace ; the ashes of bituminous coal and wood charcoal ; and found it of great advantage without any other manure. Agricultural chemistry has yet a great work before it, in the solution of these recondite operations.*

A farmer in Stockbridge speaks in strong terms of the beneficial effects of powdered lime-stone wherever it has been applied. At the mill for sawing and planing marble by a very ingenious machinery, much of this material is found reduced to a very fine powder.

IX. FARM BUILDINGS.

The buildings in the county are almost universally of wood. The best of building stone abounds ; yet I recollect but a single stone house in the county ; and to this, reference is had in my first report, page 121. Here it is stated that the contract for the erection of a

* Appendix D.

stone house was somewhat less than that of wood ; and in other respects it is greatly to be preferred.

I recollect a single instance only of a convenient barn cellar for the deposit of the manure ; and its protection from the exhausting and evaporating process of sun and air and rain. This is a most important improvement yet to be made ; but it is certain the value of manure is not half appreciated in this county. The broken character of the land throughout the county, affords every where the finest locations for this object ; and if in addition to providing for a location where a good cellar could be made under the barn, the building should be so placed that the barn floor could be laid upon the beams, and the drive-way be into the end directly under the roof, there would be an immense saving of room, labor, and fatigue. In that case all the hay and grain would be pitched *down* instead of *up* ; and great despatch secured ; which, in capricious hay-weather, is sometimes of great importance. The severe labor and excessive heat commonly attendant upon pitching off and storing away hay in our common barns would be also much alleviated. Two barns in Worcester county, erected by those careful and excellent husbandmen, the Shakers, are upon this plan, and greatly approved for their convenience. I am promised a precise account of their dimensions and arrangement, which I hope to be able to lay before the public in my report of that county. They combine many advantages ; and are an improvement upon the Pennsylvania barns, where the drive-way and entrance is usually in the second story ; and the passage way is formed by an abutment on the outside, presenting an ascent at an easy angle. In Lanesboro', in one of the neatest establishments which I ever witnessed, there was a little contrivance connected with the doors, the convenience of which was admirable. The doors were none of them swung upon hinges ; but run upon small wheels, and were made to slide in by the side of the wall. These wheels or trucks were attached to the upper end of the door by a small wooden ledge, by which the door was suspended. The door when opened was entirely out of the way. It could be opened a greater or a less distance at pleasure. There was no groove at bottom to become filled up with dirt, and obstruct the opening of the door ; and there was no occasion of clearing away any snow or other accidental obstruction from other matters, which

might be accumulated in front, in order to open it. There were also none of the usual troubles of the door being lifted from its hinges or being slammed or broken by the wind. It is a small affair but accomplished much convenience ; and is of a piece with every other part of this neat and exact establishment.

Of the remarkable barn of a circular form, at the Shaker's village at Hancock, I shall speak more particularly in another place. It is three stories in height, and the entrance is upon the second floor. It is ninety-six feet in diameter. The building is of stone, and of the most substantial and careful workmanship, like every other production of this remarkable community. It is a form of building which involves a considerable loss of room, and too expensive for the adoption of common farmers.

X. SHAKERS' ESTABLISHMENTS.

In a survey of the Agriculture of Berkshire, it would be inexcusable to pass over these establishments.

1. The Family at Tyringham consists ordinarily of one hundred members. The farm is understood to contain more than one thousand acres, principally situated on the side of a high hill, and running down into the valley, where it is crossed by the small stream called Hop brook, which empties into the Housatonic river at South Lee. The view from this eminence, as the prospect extends towards the northwest, embracing the village of Lenox, "set upon a hill," with the whole intervening valley of a diversified aspect and luxuriant soil, the little manufacturing bee-hive of South Lee, and the many rich summits every where scattered in the background of the picture, their tops and sides fringed with the chesnut and the rock maple, and the noble pile of Saddle-Mountain lying in the distant perspective like a contemplative giant in his repose, is among the most beautiful of those enchanting views, which are constantly opening upon the traveller, in this picturesque region.

The principal object of their farming, at Tyringham, is the raising of stock ; neat cattle especially. Their dairy is well managed ; and

they have a garden of four or five acres, devoted to the raising of garden seeds and medicinal herbs, under skilful and successful cultivation. Their annual sales have sometimes amounted to \$3,100 ; and they allow to their agents twenty-five per cent. commission on sales, and take back what is unsold. They produce some wheat, corn, and oats ; and they are now effecting with great labor and admirable skill the redemption of extensive alluvial meadows on Hopbrook, by draining, rooting out the stumps, and cultivating the soil, which will bring these lands under a course of most productive improvement.

Of the religion of this peculiar people, it is not for me in this place to speak. A religion which holds the severest restraint over appetites and passions ever liable by their excesses to lead men astray, which encourages industry, frugality, mutual love and kindness, and that which is certainly not lowest in the scale of virtues, the most exemplary neatness and order in every thing, is so far entitled to respect and commendation. Under whatever aspect we view it, we have at least occasion to congratulate ourselves, that we live under a government tolerant to every honest difference of worship and opinion ; and to remember, that the same principle, which secures freedom to ourselves, should guarantee to others a like boon.

2. The establishment of the brethren at Pittsfield and Hancock, consists of about seven hundred acres, lying together ; and is possessed by three large families, containing upwards of three hundred individuals. They are united for all the general purposes of their society ; but in their financial concerns are as families separate from each other. The land is not of the best description, being low, cold and wet ; and their attention is mainly directed to the cultivation of grass and garden seeds, and the keeping of cows and sheep. Their first purpose is for their own supply. They raise the best they can, and they eat the best they raise ; and though from their temperate and careful habits their thrift is remarkable, yet the accumulation of property is evidently not a principal object with them. They have various mechanical contrivances by which their labor is abridged or lightened. They have made the best use of the water power which their place furnishes, and husband it with care and economy. They have an extensive saw-mill carried by water, and all their fuel is cut

in the same way. A simple arrangement which it may appear trifling to mention, impressed me by its shrewdness and good judgment. Ordinarily, fire wood is piled horizontally, and when exposed to the weather, becomes water soaked and mouldy. Their billets of wood being sawed were stacked up in convenient piles, the sticks being placed upright on the end, so that any water which fell upon the pile was immediately drained off. After being sawed they were neatly put up under cover.

I have already referred to their magnificent barn, built of stone of a circular form, three stories in height, ninety-six feet in diameter, and capable, as well as may be calculated, of containing from three to four hundred tons of hay. The carts enter in the second story ; the floor or drive-way is continued round by the wall for the whole of the circle, so that the cart passes round the entire distance, and when the hay is discharged, goes out at the same door at which it entered. All the hay is deposited in the centre. Several loaded wagons may stand in the floor, and be sheltered and unloaded at the same time.

The roof is a beautiful and curious specimen of carpentry ; and appears to be most securely supported. In the centre of the floor, there rises to the apex of the roof a single column as large as an admiral's mast, around which a hollow frame of slats is fixed, and which serves as a ventilator or chimney to discharge the steam of the hay. It is open at the top, and protected by a small cupola against the rain. At the same time the hay is raised from the ground, about a foot by an open floor of slats, so that there is, while the hay is new, a constant circulation of air up this chimney ; and one of the friends informed me, that the steam passing from the hay in this mode was oftentimes so dense, that, to use his own expression, "you could wash your hands in it." The arrangements for the cattle are in the lower story, where every animal has its place and number, and where every cow is designated by a label on the post as in milk or otherwise. In this circular form, there is of course a considerable loss of room ; yet the method of feeding is easy ; the place is kept clean ; the whole arrangements are convenient ; and the kindly treated animals standing around this huge mass of hay, have at least the pleasure of seeing the good things in store for them. These friends have singular advantages, in the amount of labor which they are able at any time to command and apply to any object which they have in view ;

and their establishment presents a beautiful illustration of the advantages of well directed industry, neatness, and order. The great rule of domestic economy "a place for every thing, and every thing in its place," is nowhere more strikingly exemplified; and though they make no pretensions to the fine arts, and have little of what is called taste, yet all their arrangements, and the products of their labor, exhibit the proofs of thoroughness, permanency, utility, and substantial comfort.

Their dairy is exquisitely neat in every part of it. Their piggery is the exclusive concern of a single individual; and illustrates the utility in a large concern of a division of labor and of individual responsibility. They have attempted an improvement of their neat stock, by the introduction of some of the improved breeds, and the young stock which they were raising from this cross, promised extremely well, though no opportunity had been had to test its qualities for milk. Their land is considered in a great measure unfavorable to the production of grain: and a large portion of their bread stuff therefore is purchased. They have likewise occasionally hired extensive tracts of meadow on the Mohawk river in the state of New York, which they have cultivated by colonies, in order to obtain brush for the manufacture of brooms, a branch of business which heretofore they have carried on to a considerable extent. They keep a large flock of sheep; and all their woollen fabrics are manufactured among themselves. They likewise are very extensively engaged in the raising of garden seeds, which are put up in a very neat manner, as is well known, and distributed over the country.

A three story brick building or college, erected for one of their families, is most remarkable for its neatness and the excellence of the materials and workmanship. What by the "world's people," is called taste, that is a study of symmetry and beauty in the forms of objects, is studiously abjured by this remarkable community. Yet in the perfection of finish, which they bestow upon every production of their mechanical industry, they show that native perception of fitness, order, and harmony, which constitute the elements of the most cultivated and refined taste. The same amount of expense and labor, of which they are never sparing, already devoted to the construction of their buildings and the arrangement of their grounds, had they indulged themselves even in a slight degree in tasteful ornament

and embellishment, without impairing at all the convenience, utility, or permanence of their works, might have rendered them extremely beautiful. In so doing they would have found in them a new and prolific source of pleasure, may I not add also of improvement. I know their candor will pardon these suggestions which have no unkind origin; and which have their foundation in the universal beauty of the natural world, as seen every where and always even in the perishable crystals of the frost, and the fading tints of the sky, in the plumage of the birds, in the unrivalled splendors of the vegetable world; in a word in every production of the divine power and goodness from an atom floating in the sunbeam to a planet, wheeling its course in the glittering arches of the skies.

XI. EXPERIMENTS AND IMPROVEMENTS.

I have already referred to the experiments made in the application of lime and marl. They are not of a sufficiently extensive or exact character to be deemed conclusive. It is hoped, as suggested in the valuable report of the geological surveyor, that they will be continued. There is no reason to doubt, from the long experience of other countries, that in her lime and marls the county of Berkshire contains inexhaustible sources of productiveness and the means of greatly improving her soils.

The improvement of agriculture, as a science and an art, depends greatly upon facts. Experiments, illustrating what can or what cannot be done, are of great value. Farmers object to agricultural experiments, as involving expenditures beyond their means; but an experiment on a small scale, within the means of the humblest farmer, may be as instructive and conclusive, in reference to the point sought to be ascertained, as an experiment of an extended and expensive character. The point to be mainly insisted upon, and that, in which farmers commonly fail, is exactness of observation. Without this, no experiment is of any value. In this matter I have been so often disappointed, that my importunity will, I hope, be excused, when I urge upon farmers attempting, or at all disposed to attempt,

experiments, to pay the most pointed attention to the mode of conducting them ; their progress ; the circumstances under which they are begun and carried on ; and their actual results.

I believe it must be admitted, that there is no class of men of business so little attentive to exactness, in all their operations ; and none more ready to draw hasty conclusions, or to deal in what are mere guesses, than farmers.

I certainly design no disrespect to the farmers, when I give an example of a conversation to which I am too often a party. Indeed I should be almost willing to give offence, if I could by any means induce to more precision and carefulness.

Thus : if I ask a farmer, if he has used lime on his land or his crops ? he answers, yes. In what quantity to the acre ? he did not measure the lime or the land. Could he see any difference where he limed, and where he did not lime ? he limed the whole field equally. Did he apply it with or without manure, single or in compost, or did he apply it to a part of the field with or without manure ? he applied it to all parts of the field in the same way. Did he perceive any good effects upon the field thus limed and manured ? yes. How were these effects ascertained ? did he measure the crop ? no, he measured nothing, but he was of *opinion* that the land was benefited by the application ; he *thought* there was a difference in the result from what would have been, had it not been limed. But was this difference attributable to the lime or the manure ? it was all limed and manured alike ; but he *supposed* it was the lime. I might go on, but this will suffice. This is a true account of the manner in which my inquiries are often answered ; and shows how what farmers call experiments are often conducted. But can any thing be plainer, than that by such experiments no certainty is reached. Whether any advantage was obtained from liming alone, or liming with manure cannot be determined, because the field was all served alike, and there were, therefore, no means of comparison. Again ; if the crop is not measured and compared with a crop not thus managed, how can it be determined what has or has not been gained ? Again : if neither part was served with lime alone, and neither with manure alone, and neither part separately from the part with lime and manure in combination, how could any thing be determined in regard to the comparative value or use of lime or manure singly or in conjunction ? Then

again, if any thing has been effected, yet, if nothing has been measured, neither lime, nor manure, nor land, nor crop, how can it be ascertained what has been done, and what efficacy or utility is to be accredited to the lime?

I state this case, which is not in any respect exaggerated, to illustrate the difficulty of arriving at correct results solely from the neglect of intelligent and exact inquiry and experiment. But I shall be answered, that it would be too much trouble to be as exact and particular as I propose. This is an answer which an inquisitive and intelligent farmer, if he means to respect himself, will be very shy of giving. In most cases, however, it costs scarcely more pains to conduct and observe an experiment with exactness, than to do it in the uncertain way in which it is commonly done. But in the latter case we may be properly said to determine nothing; in the former we reach the object of our inquiry, which is generally much more than a compensation for any pains-taking it may cost us. But in no matter whatever is knowledge of any substantial value acquired without labor and careful inquiry. We might as well complain that we cannot obtain the harvest without sowing the seed, and tending and cultivating the growth. But the constitution and laws of the divine providence in these cases are inviolable, and not to be turned aside for our convenience or indolence; and as far as concerns man's moral benefit, the benevolence of this unchangeableness corresponds with its infinite wisdom.

1. POTATOES.—An experiment in planting potatoes was made by T. F. Plunkett, of Pittsfield, with a view to ascertain the proper description and quantity of seed to be used. I subjoin the account of it; and deeming them interesting in the same connexion, I add the results of some experiments made with the same view, in Dover, N. H., in the year 1813.

Experiment in planting Potatoes, in 1838, by T. F. Plunkett.

1st Row. Seeded with 1 large potato to each hill; product $5\frac{1}{2}$ bs., and good size.

2d Row. Seeded with 2 small potatoes to each hill; product, $4\frac{1}{4}$ bs., and small size.

3d Row. Seeded with 1 small potato to each hill; product, $2\frac{3}{4}$ bs., and small size.

4th Row. Seeded with 1 seed end to each hill ; product, 3 bs. and small size.

5th Row. Seeded with butt end to each hill ; product, 5 bs., and good size.

6th Row. Seeded with one-half potato to each hill ; product, 4½ bs., and middle size.

7th Row. Seeded with 2 common size potatoes to each hill ; product, 6 bs., and varied sizes.

8th Row. Seeded with 1 pink-eyed potato to each hill ; product, 3 bs., and fine size.

9th Row. Seeded with 1 black kidney-shape, to each hill ; product, 4½ bs., and fine size.

Remarks.—The first seven rows were planted with the Burr or flesh-colored potatoes. The first row produced decidedly the handsomest potatoes for size, and I should say that they were the most profitable. All were manured and cultivated alike.

Result of fifteen Experiments made at Dover, (N. H.) A. D. 1813, of seeding Potatoes, consisting of twenty hills—the rows three feet apart, hills two feet, without any manure, on sandy loam that had been two years planted.

Number of experiments.	Quantity of seed.	Description of the seed as put into the ground.	Weight of seed in 20 hills.		Total produce.
			lbs.	oz.	
No. 1	12	Two whole potatoes,	15		80
2	6	One do.	7	8	48
3	12	Two do. cut in halves, latitudinally,	15		61
4	6	One do. do. do.	7	8	55
5	2	The eyes of two potatoes which weighed 12 oz.	3	4	28
6	1	The eyes of one do. do.	1	10	20
7	6	One potato cut in quarters, longitudinally,	7	8	56
8	3	Half do. do. do.	3	12	35
9	3	Half do. cut in halves, do.	3	12	37
10	1½	One quarter of a potato,	1	14	32
11	4	Four potatoes, whole wt. 1 oz. each, produce small size,	5		39
12	2	Two do. do. do. rather small,	2	8	35
13	1	One do. do. do. good size,	1	4	31
14	4	The sprout end of two potatoes, ½ of each,	5		42
15	6	One potato, weight 6 oz. eyes cut out, .	7	8	33
			88	0	632
Gain by manuring,					143
					lbs. 775

The following fifteen experiments are exactly the same as the former, with the addition only of a shovel full of good barn manure to each hill.

Number of experiments.	Quantity of seed. oz.	Description of the seed as put into the ground.	Weight of seed in 20 hills.		Total produce.
			lbs.	oz.	
No. 1	12	Two whole potatoes,	15		76
2	6	One do.	7	8	46
3	12	Two do. cut in halves, latitudinally,	15		73
4	6	One do. do. do.	7	8	64
5	2	The eyes of two potatoes which weighed 12 oz.	3	4	44
6	1	The eyes of one do. do.	1	10	46
7	6	One potato cut in quarters, longitudinally,	7	8	65
8	3	Half do. do. do.	3	12	48
9	3	Half do. cut in halves, do.	3	12	54
10	1½	One quarter of a potato,	1	14	38
11	4	Four potatoes, wt. 1 oz. each, the produce, small size,	5		52
12	2	Two do. do. rather small,	2	8	44
13	1	One do. do. good size,	1	4	37
14	4	The sprout end of two potatoes, ½ of each,	5		46
15	6	One potato, the eyes cut out,	7	8	42
			88	0	775

*Result of ten experiments of seeding Potatoes, twenty hills each, manured with a small handful of *Rock-weed.*

Number of experiments.	Quantity of seed. oz.	Description of the seed as put into the ground.	Weight of seed in 20 hills.		Total produce.
			lbs.	oz.	
No. 1	12	Two whole potatoes,	15		73
2	6	One do.	7	8	61
3	6	One do. quartered longitudinally,	7	8	67
4	3	One half potato, divided do.	3	12	52
5	1½	One quarter of the potato,	1	14	26
6	8	Four whole potatoes, 2 oz. each,	10		69
7	6	Three do. do.	7	8	44
8	4	Two do. do.	5		53
9	2	One do. do.	2	8	42
10	2	One do cut in halves,	2	8	47
			63	2	534

* Fucus of Lin. much used as a manure for raising corn on sandy plains in this vicinity.

The foregoing experiments prove, what all experienced farmers were convinced of, that poor land requires more seed in all kinds of crops, than that under a high state of cultivation.

N. B. A bushel of potatoes weighs 56 to 58 lbs.

The potato used for seed in the above described experiments was the large blue."

Robert Campbell of Pittsfield, states that potatoes, which are cut early, come up sooner ; and remain through the season in advance of those which are not thus cut. This, he says, is confirmed by the experience of other farmers, who recommend therefore that potatoes should be cut and dried sometime before planting.

Jonathan Allen of Pittsfield has tried planting 45 bushels of seed to an acre, and in another case 13 bushels ; the result in the latter case was better than in the former. This is at variance with the experience of many farmers. He is desirous of having four sprouts in a hill. The quantity of seed to an acre should depend somewhat on the manner of planting and condition of the land. Drill planting requires more seed than planting in hills ; but the crop may be expected to be larger. In drills three feet apart and with good sized sets or cuttings one foot apart in the rows about twenty-five bushels for seed will be required.

Wm. Boardman of Sheffield, who is successful in raising very fine potatoes and of a large size, always plants those which are large ; and says they should not be planted deeply ; nor covered much ; nor often ploughed. His potatoes, which I saw, were remarkable for the absence of small potatoes.

They have a black potato in Pittsfield, of a kidney shape, which is of great excellence, but does not yield abundantly. I do not know its origin. In the starch manufactory at Williamstown, they have found the long red or La Plata potato unfit for their purposes until the spring, and then not deemed equal to many other kinds. This would seem to indicate the proper time for eating it ; and for giving it to stock.

Mr. Plunkett of South Adams, gives the opinion of an Irish gentleman, strongly against giving potatoes freely to milch cows. It is condemned in his country, as serving to enlarge to too great a degree the milk vessels of the animal and thus produce disease. The ani-

mal so fed falls away the second season. Mr. P. is opposed to their use for ewes for the same reason.

For fattening wethers I know well their value. Gayton Williams of Heath, Franklin Co. is accustomed to boil them and give them freely to his wethers, and ewes which are coming forward with early lambs. May not the cooking of them correct the injurious qualities attributed to them by Mr. Plunkett, when given raw? For fattening oxen in Deerfield, Franklin Co., five bushels of raw potatoes are deemed equal to one bushel of corn. In my own experience the advantages from the boiling of potatoes for fattening cattle are not an equivalent for the expense and trouble. In a very exact trial made in this matter in France, the advantages in fattening sheep of cooked over uncooked potatoes were only as 13 to 12. This difference will scarcely pay the expense. Potatoes are a crop so well known among us, that little need be said as to the mode of cultivation. If a large crop is desired, my opinion is that they should be planted in drills; the rows being about two and a half feet or three apart, and the sets placed not less than a foot apart in the rows. They may then be mainly cultivated with the plough. They should not be planted deeply; and they should be kept clean. In general few plants are cultivated in a more slovenly manner. Under good cultivation, few crops afford more valuable feed to an acre. They are, I believe, however an exhausting and not an ameliorating crop. They return little to the soil; and the almost universal experience is that wheat does by no means so well after potatoes as after Indian corn. They are in general so much neglected in the cultivation that the ground becomes surcharged with weeds.

2. CARROTS. Jeremiah Valet, late of Stockbridge, but now an emigrant to the fertile west, a true philosopher in a homely garb, a pure diamond though never in the hands of the lapidary, (I would not say this if he were not out of the reach of my voice,) was much in the habit of raising carrots; and gave a preference to them over every other vegetable for fattening swine and cattle. This was the result of repeated trials and long experience. To fatten swine he gives them boiled; to store hogs, raw. His crops average 800 bushels to the acre.

Jno. Merrill of South Lee, has been a very successful cultivator

of carrots. He states the yield on two acres at 600 bushels to the acre; and the cost of cultivation, exclusive of manure and rent of land, at 25 dollars per acre; or a little more than four cents per bushel. For feeding horses, he says, he should prefer one hundred bushels of carrots and one hundred bushels of oats to two hundred bushels of oats. He applied them in a raw state to the feeding of his team horses, and horses in preparation for market; and they were kept by them in high health and spirits. Oats followed his carrot crop on the same ground with great success. The experience of J. C. Curwen, Eng. in the use of carrots for horses, corresponds with that of Mr. Merrill. The authority of Curwen is unquestionable; and he was in the habit of employing constantly as many as eighty horses on his farm and in his extensive coal mines.

"I cannot omit" he says, "stating the great profit of carrots. I have found by the experience of the last two years, that where eight pounds of oat-feeding was allowed to draft horses, four pounds might be taken away and supplied by an equal weight of carrots; and the health, spirit, and ability of the horses to do their work be perfectly as good as with the whole quantity of oats. With the drill husbandry and proper attention, very good crops of carrots may be obtained upon soils, not generally supposed suitable to their growth."

He adds in another place. "The profits and advantages of carrots are in my opinion greater than any other crop. This admirable root has, upon repeated and very extensive trials for the last three years, been found to answer most perfectly as a part substitute for oats. Where ten pounds of oats are given per day, four pounds may be taken away; and their place supplied by five pounds of carrots. This has been practised in the feeding of eighty horses for the last three years, with the most complete success, and the health and condition of the horses allowed to be improved by the exchange. An acre of carrots supplies an equal quantity of food for working horses, as sixteen to twenty acres of oats."*

My own experience of the value of carrots, which has not been small, fully confirms these statements. I have obtained at the rate of more than a thousand bushels to the acre on three quarters of an

* Curwen's Hints on Agricultural Subjects.

acre ; but on several acres my crop has usually averaged 600 bushels to the acre.

— Smith of Middlefield, Hampshire county, from three-fourths of an acre obtained 900 bushels.

Charles Knowlton of Ashfield, Franklin county, this year obtained 90 bushels on twelve rods of ground. This was at the rate of 1200 bushels to the acre.

D. Moore of Concord, Middlesex county, from six rods of land, obtained this year 56 bushels, or at the rate of 1493 bushels to the acre.

According to Josiah Quincy's experience in Quincy, Plymouth co. charging labor at one dollar per day his carrots cost him eleven cents per bushel. David and Stephen Little, in Newbury, Essex county, in 1813, obtained 961 bushels to the acre, at an expense of \$79, 50 every expense included, excepting rent of land. This was at a rate less than nine cents to a bushel.

I shall subjoin in the Appendix an account of an experiment made in feeding swine, illustrating the value of this vegetable, from Arthur Young.*

The great objection to the cultivation of carrots lies in the difficulty of keeping them while growing free from weeds. If sowed without any preparation, the seed is a long time in germinating ; and a plentiful crop of weeds is liable to get possession of the land before the carrots make their appearance. There is another difficulty. The carrot seed from its minuteness is liable to be sowed too thickly. To obviate in a degree these objections, let the ground be ploughed deeply, well manured, and put in fine tilth ; and let the first and perhaps the second crop of weeds be ploughed in. After this let the land be thrown into ridges two feet apart, and the seed sown on top of the ridges either in a single line, or the ridges be made so wide as to receive two rows of carrots, eight inches or one foot apart. In the mean time the seed should be freely mixed with fine sand ; and this sand kept so moist that the seed shall germinate. As soon as it is sprouted it should be sown. This may be so arranged that the sowing shall take place about the first of June. They will then have the start of the weeds. The mixture with sand will prevent their

*Appendix E.

being sown too thickly. After the first thinning and weeding is over, if done with care, the battle may be considered as won. Afterwards let them be cultivated with a plough or cultivator and kept clean. When the time of digging arrives, the work will be greatly facilitated by passing a plough directly along the side of the carrots ; and they are easily thrown out by the hand.

3. RUTA BAGA.—Ruta Baga are differently estimated by different individuals. Mr. Merrill of Lee, Valet of Stockbridge, Lawton of Sheffield, Bacon and Chapin of Richmond, Colt, Goodrich and Plunkett of Pittsfield, highly approve of ruta бага ; and some of them consider them of equal value with potatoes for swine or cattle. Mr. Werden of Richmond, dislikes them, and says the general experience of farmers there, is against them. It is difficult to reconcile these contradictory statements. They are by no means so nutritious as potatoes, especially those kinds of potatoes which are most farinaceous ; and they are not comparable to carrots or parsnips or the sugar-beet for feeding stock. But they are a valuable, though an exhausting crop ; and are raised at comparatively little expense. The golden yellow turnips with purple tops are the preferable kind. The white kinds, and what are called the French turnips, are an inferior plant.

Mr. Merrill of Lee, applied them to the fattening of cattle with much success. He purchased a yoke of cattle in the fall, in low flesh, at \$50, and having fed them through the winter on 2 bushels of ruta бага each per day, with good hay but with no other provender, he sold them in the spring for \$170, at \$8 per 100 lbs.

Mr. Ashburner of Stockbridge, whose cultivation of vegetables is nowhere excelled in neatness and productiveness, is in the habit of transplanting his sugar-beet by merely making a hole with a hoe, and laying them in horizontally keeping the tops free. He has found planting with a dibble too slow a process ; and the plant is not so likely to live, as the fine dirt is not so easily brought up to the small roots of the plant. He has tried the transplanting of wheat by way of experiment, but it was not successful.

I have transplanted ruta бага with great despatch and entire success, simply by ploughing a furrow ; then taking the plants from a seed-bed, dipping them in water, separating them and laying them

along in the furrow, with the top on the furrow-slice, at a distance of a foot apart, as fast as a man could walk ; and soon following with a plough and covering them. It is well to go over the ground with a hoe to relieve plants that may be too deeply buried, and to cover those which may by accident have been left exposed. They are almost certain to live ; and I have thought the work not more than to thin them out when they are sowed thickly, where they are to stand. There is an additional advantage in this method, that the plants may be forwarded in the nursery, when it is not in your power to prepare the land in season for sowing the crop where they are intended to stand. I am not able to say whether the sugar-beet is as tenacious of life ; but the experiments of Mr. Ashburner lead to such a presumption.

4. OATS.—John M. Hurlbut in Great Barrington, whose establishment within and without doors is a beautiful pattern of exact, neat, and profitable husbandry rarely equalled, is of opinion that oats should be sown just at the time when the grass starts vigorously. The crop is injuriously affected from too early or too late planting.

5. WHEAT.—The Messrs. Spurr and Messrs. Curtis of Sheffield, Messrs. Bacon of Richmond, John L. Cooper and Philo Parks of Sheffield, John M. Hurlbut and Ralph Taylor of Great Barrington, Eldad Post of Lenox, and others, have used lime for wheat without any perceptible advantage. Ralph Taylor has applied lime to his land at the rate of 200 bushels to the acre, and harrowed it in, but now after three or four years, perceives no benefit. These gentlemen, Claudius Wheeler of Great Barrington, and a host of others all hold the opinion that the blasting of wheat depends upon atmospheric influences ; the condition of the weather in certain stages of the growth of the wheat, rather than upon any condition of the soil. The great consideration to which the opinions of these gentlemen are entitled, will be acknowledged by those who know them. I do not mention their experience as at all decisive of the inutility of lime ; but as showing in how great obscurity the subject is involved, and how much need there is of farther inquiries and experiments of an exact character.

Adonijah Jones of Otis says, that when he was accustomed to plough in the seed of his winter wheat instead of harrowing, he seldom had any killed by frost. The experience of a competent farmer in Northampton, leads to a similar conclusion. From an experiment on spring wheat made by Derrick I. Spurr in Sheffield, it would seem that harrowing or dragging it was preferable. He was advised, in sowing his seed last spring, not to plough in his seed. But he ploughed in a small strip in the centre of his field; the wheat on this part exhibited a taller and stouter growth, but it did not come up so well; much seed appeared to fail, and had he ploughed in the whole, he thinks he should not have had a third of the crop which he obtained by simply dragging in or harrowing in the seed.

Eldad Post, of Lenox, is in the practice of harrowing his field of wheat daily after it has been sown, for ten days; and considers the practice of great utility. It quickens vegetation, by bringing the earth to the sun and air. It is a custom in France, to harrow wheat with a light harrow after it has attained a growth of four or five inches. I have several times tried this method with great benefit. The vegetation is greatly assisted by bringing fresh earth often to the plants, and keeping the ground loose and fine; or as farmers sometimes term it, alive, provided it can be done without inflicting too great an injury on the small fibres and rootlets of the plants.

E. Post lost his first sowing of Italian wheat, which he attributes to the exclusion of the wheat from the external air in tight casks, by which he thinks its germinating power was destroyed; and says he knows facts, which go to confirm this opinion. O. Curtis, of Sheffield, says much of his seed wheat was destroyed by being soaked too long in the brine.* Mr. Hathaway, of Rome, N. Y., by whom the Italian wheat was first cultivated in this county, says this kind is more liable to injury from this practice, than other wheat. I mention these opinions, not as endorsing them; but as the observations of intelligent and observing men, and therefore deserving of consideration and inquiry. Is it not possible, that Mr. Post's wheat may have been put up in a damp state, and injured by being heated in the cask? Mr. Curtis's opinion is not according to the judgment of many farmers who do not object to the wheat's remaining long in the brine, provided it is not exposed before sowing to the alternatives of drying and wetting.

*Appendix F.

Levi Goodrich, of Pittsfield, showed me a field of considerable extent, where in one part clover and grass followed corn ; in the other part of the same field, and all other circumstances similar, clover and grass followed potatoes. The grass after corn was excellent ; after potatoes, not one-sixth as large. A result somewhat similar has followed in respect to wheat taken after corn or after potatoes. The testimony of the farmers, as given to the committee of the Agricultural Society for viewing crops, and to myself likewise, is equally decisive in this matter. The inference seems plain, that potatoes are a much more exhausting crop than corn.

The subject of the wheat-culture has, within two or three years, attracted great and not undeserved attention through the state. The causes of its failure have been matter of much inquiry and discussion. The deficiency of calcareous matter, or the carbonate of lime, has been confidently pronounced the great and sole cause. That some portion of lime in the soil in some form is essential seems generally conceded ; but that a certain amount of the carbonate of lime is indispensable, is not so fully borne out by facts, as to be pronounced unquestionable. On a soil in Chelmsford, wheat has been raised for twenty years at the rate of from twenty to thirty bushels to the acre ; and with but a single instance of failure during that time. From Dr. Dana, who, with the most public-spirited views, is disposed to render any aid in his power to the cause of an improved agriculture,—and few individuals in the country are capable of rendering so important chemical services,—I have obtained an analysis of the soil of this farm, which I shall subjoin in the Appendix.* It will be seen, from that analysis, that “ it contains no trace of the carbonate of lime.” This remarkable result shows the necessity of extreme caution in adopting with confidence any theory on subjects so recondite and mysterious as every thing in nature connected with animal and vegetable life, until at least we are able to say what, in either case, life itself is. This is a matter in which the superficial may see no difficulty of explanation ; but, in truth, it is a secret and mystery, the solution of which the truly philosophic mind will perceive is not yet even approached. That the application of lime to land has been often attended with the most beneficial effects, facts demonstrating such re-

* Appendix D. Letter II.

sults, do not leave us room to doubt. In this place, however, it is not convenient to me to go farther into a subject, which, in the progress of the survey, will receive its due share of attention.

My own belief is, that there is as much lime now in our soils as was ever to be found there. Formerly, there was no difficulty in raising wheat here of the best quality. Now it is often raised successfully, and always on newly cleared land, excepting only accidents, which have no connexion with the soil, accidents from insects and changes or conditions of the weather. I believe therefore there is, in fact, no difficulty, under proper management, in its cultivation; and a crop of wheat may be considered ordinarily as certain as other crops. This the experience of many farmers confirms.

The great point to be aimed at is to bring a new soil to the surface, on which to plant your wheat. Plough therefore deep; completely invert the sod, and keep it undisturbed. Bring a portion of the subsoil to the surface, to be operated upon by the influences of sun, rain, air, and compost manure. Then make corn your first crop; and wheat your second; or make wheat your first crop; and with proper seeding and tilth, there is reason to believe that your crop will be as sure as human skill can make it. So many facts, confirming the success of this process, have come under my knowledge, that I feel if not an absolute yet a very strong confidence in it; and urge it upon the farmers to make a fair experiment.

Our cultivation is in many cases too superficial. In the First Report of the Agriculture of Massachusetts I took much pains to recommend the introduction of a subsoil plough, of which I then gave drawings and a full account. From farther inquiries and some experiments, which have come within my observation, my convictions of the great utility and importance of such an implement are strengthened; and I earnestly request the attention of the farmers to the subject as therein treated, and to experiments with it, by which, under proper management, I verily believe the productiveness of their soil may be increased five and twenty or fifty per cent.; and many parts of Massachusetts be rendered as productive in the bread-grains, as those other parts of our country, which have been deemed singularly, and in this respect almost exclusively, favored.

6. **WIRE-WORM.**—Manning Brown, of Williamstown, says,

that in planting Indian corn upon green-sward, he has always suffered much from the wire-worm ; but when he makes his first crop oats, and his second corn, he has entirely escaped the injury from this source. He has found, likewise, opening the corn-hills, and pouring a spoonful of brine at the roots a remedy against their ravages. This would be a tedious process.

Some of the best farmers in Massachusetts recommend, from their own experience, late spring ploughing, as the great preventive of the depredations of the cut-worm among corn. In the vegetation, which is then turned under, the worms find sufficient feed to divert them from the corn. Other farmers in this matter have recommended ploughing early in the autumn, say in August ; and the grass which has then time to start up among the furrows, supplies the worm, and prevents his attacks upon the corn. But on various accounts, the spring ploughing for this purpose is to be preferred. It seems to be established, that a freshly turned soil is more favorable to vegetation than one that has been longer ploughed ; and the seed should be deposited as soon as may be after the land is ploughed and prepared. Mr. Keely's experiments in sowing rye, fully detailed in the report of Essex county, strongly urge this point.

7. GRAIN-INSECT—(*Cecidomyia Tritici*.)—Mr. Brown has proved to his own conviction, the value of the application of newly slacked lime upon his wheat, at the time of flowering against the ravages of the grain-insect. “ The field had just been visited by the fly, when he gave his wheat a thorough coating of newly and finely slacked lime while the dew was upon it. On a part of the field no lime was put. On the parts limed, their ravages seemed to have been stopped at once ; on the part not limed, the crop was entirely destroyed.” Mr. Brown's excellent husbandry gives a value to his authority.

8. GRAIN-WORM—(*Vibrio Tritici*.)—I found in Egremont a worm abounding in the grain in two cases, which none of the farmers had been before acquainted with. It was of a brown color, and about a third of an inch in length ; and when the wheat was threshed, it was found in great quantities among the chaff. The threshing and winnowing the wheat appeared to have thoroughly cleared it of them.

There was evidence that they had destroyed a great many heads ; and had not the wheat been threshed and cleaned, their injuries would have been much more extensive. These two cases are the only ones in which I had ever seen or heard of this worm.

It is, however, not unknown abroad. From plates and accounts given in the Penny Magazine for 1833, Nos. 86 and 90, as well as I can judge, the same insect is described as the *Vibrio Tritici*, and the different stages of his progress are fully illustrated by plates ; I shall make some extracts from it in the Appendix.* The account is too long to be presented here. The paper says, "the existence of this most extraordinary disease in wheat has been, comparatively speaking, but a very short time known ; and it is only of a very recent date that it has attracted the notice of the practical agriculturist in this country." In the county of Kent, Eng., it seems, however, to have been known for some years.

9. LOCUST-BORER.—Allen C. Metcalf of Lenox, washed his locust trees with spirits of turpentine, and in that way, as he believes, compelled the borer to leave them, after they had made severe ravages. The trees, as I saw them, were much perforated, but there were no where any signs of the presence of the worm.

XII. REPORTS OF FARMS.

I shall now give a few reports of farms in the country as illustrative of the general condition of its husbandry. The numbers are a mere index to the arrangement ; and express no preference of character or condition.

FARM I.—Wood 60 acres, tillage 30 acres, mowing 80 acres, pasturage 180 acres. At a distance from home 200 acres in pasturage. Stock—sheep 1000, oxen 8, milch cows 6, horses 3. In 1837-8, there were raised on this farm mainly for the consumption

* Appendix G.

of the stock :—ruta бага 1 acre and 2 rods, 1080 bs., English turnips 5 acres, 4300 bs., potatoes 3 acres, 1244 bs. Total 6624 bushels.

I quote from the report of the above farmer as follows : “ As to the value of the respective vegetables for food, the following statement will perhaps best exhibit it. I have commenced feeding, and shall continue to feed

14 head of horned cattle each per day, with 20 lbs. cut straw at 4 cts. for each 20 lbs.,	56
Also to each 113 lbs. roots grated mixed with straw, 3 cts. each,	42
Allow 150 days for the season of feeding at 98 cts. is	\$147 00
The same stock would require 20 lbs. of hay each per day ; for 150 days they would consume 42,000 lbs., equal to 21 tons, at the moderate price of \$10 per ton,	210 00
	\$357 98
Balance in favor of the root feed on 14 head is	\$63 00

You will perceive that the value of vegetables for food is 6 cts. per bushel, while hay is at \$10 and straw at \$4 per ton. The extra cost in preparing the food is more than balanced, if proper care be taken, by the extra quantity of manure made.” The current year 1838-9, there are on this farm more than fifty acres under the plough. In wheat 10 acres, in oats 20 acres, in ruta бага 2 or more—in carrots, potatoes, &c. &c.

FARM II.—200 acres exclusive of wood, horses 4, oxen 6, cows 8, sheep 700, swine 5, young neat cattle 12.

Mowing 40 acres upland, 2 tons to an acre, intervale alluvion 50 acres, two tons to the acre ; wheat 10 acres, 2 give 10 bs. to the acre, 4 acres give 20 bs. to the acre ; Indian corn 3 acres, 2 give 58 bs. to the acre, 1 gave 93 bs. ; rye 14 acres, 16 bs. to the acre ; potatoes 8 acres, 6 acres give 200 bs. to the acre, 2 acres give 450 each ; ruta бага 5 acres, 700 bs. to the acre ; pork 2000 lbs. ; average yield of wool 3 lbs. to a sheep.

FARM III.—Acres 102, tillage 23, mowing 14. Crops—hay 57 tons, $1\frac{1}{2}$ ton to the acre; wheat one acre, $28\frac{1}{2}$ bs.; Indian corn $6\frac{1}{2}$ acres, 390 bs., 60 bs. to the acre; rye 3 acres, 56 bs.; oats 245 bs.; buckwheat $28\frac{1}{2}$; potatoes $1\frac{1}{4}$ acre, 345 bs.; turnips 100 bs.; ruta бага 60 bs.; pork 3300 lbs.; butter 481 lbs.; new milk cheese 100 lbs.; wool 600 lbs.; cider 57 bbls.; winter apples 40 bs.; lambs raised 76, valued at \$1 75 cts. each; calves raised 4, valued at \$6 each; sheep sold 34; amount \$65 50.

Stock on the above farm—horses 3, oxen 2, sheep 185, cows 4, swine 15, young stock 4.

FARM IV.—Acres 153 exclusive of wood; mowing 30, pasture 71. Stock—horses 3, oxen 6, cows 5, sheep 50, swine 19, young cattle 10.

Products—hay $52\frac{1}{2}$ tons, $1\frac{3}{4}$ tons to the acre; wheat $1\frac{3}{4}$ acres, $35\frac{1}{2}$ bs.; Indian corn $343\frac{1}{2}$ bs., 49 to an acre; rye $2\frac{1}{4}$ acres, 60 bs.; oats 15 acres 500 bs., $33\frac{1}{3}$ bs. to an acre; potatoes 1 acre, 320 bs.; turnips $\frac{1}{3}$ acre, 45 bs.; beef 8100 lbs.; pork 2147 lbs.; butter 650 lbs.; new milk cheese 558 lbs.; wool $133\frac{1}{2}$ lbs.; cider 18 bbls.; winter apples 20 bbls.; straw $12\frac{1}{2}$ tons; corn-fodder $3\frac{1}{2}$ tons. The amount of sales from this farm up to 9th of Jan., was \$712 75. The live stock raised on it was of the finest description.

FARM V.—Acres 209, of which 36 in wood. Stock—horses 4, oxen 4, cows 6, sheep 350, swine 48, colt 1, young neat stock 8.

Products 1838—hay 88 tons; wheat 240 bs.; Indian corn $710\frac{1}{2}$ bs.; rye 125 bs.; oats 150 bs.; pease and oats 90 bs.; potatoes 700 bs.; turnips among corn 75 bs.; ruta бага 1500 bs.; beef 3950 lbs.; pork 7880 lbs.; new milk cheese 1783 lbs.; butter 540 lbs.; wool 962 lbs.; cider 5 bbls.; winter apples 40 bs.; straw 15 tons; corn fodder 12 tons; manure made, 360 loads.

The amount of sales on this farm in 1838, were \$1289 79. The value of produce used or on hand was \$2309 59.

FARM VI.—Acres 200. Stock—horses 3, oxen 4, cows 18, sheep 50, swine 25, young neat stock 20.

The return of produce given from this excellent farm is very imperfect. $23\frac{1}{2}$ acres were in winter grain, 14 acres in spring grain,

1½ acres of potatoes, ½ acre of turnips, Indian corn 20 acres at 75 bs. to the acre ; pork fatted 4500 lbs. ; butter 1500 lbs. ; new milk cheese 4000 lbs.

FARM VII.—Acres 525 ; of this, however, 270 acres are in distant pasturing, and 100 in wood, leaving 155 in tillage, mowing, orcharding, wet meadow, &c. &c. Stock—horses 4, oxen 4, cows 4, sheep 500, swine 15, young neat stock 28.

Products—hay 130 tons of best quality ; 30 tons of inferior ; wheat 167 bs. ; rye 280 bs. ; oats 600 bs. ; potatoes 1300 bs. ; turnips 250 bs. ; Swedish turnips 1440 bs. ; beef fatted 6000 lbs. ; pork 1480 lbs. ; butter 360 lbs. ; wool 1280 lbs. ; maple-sugar 150 lbs. ; winter apples 60 bs. ; apples for swine 200 bs. ; straw 20 tons ; wood sold 100 cords ; manure made 260 loads ; manure bought 25 loads ; calves sold 6, \$5 each ; 80 lambs raised this year from 80 ewes.

FARM VIII.—Land which can be tilled 200 acres ; mowing 35 acres ; orcharding 3 acres ; wood 150 acres ; waste 75 acres.

Live stock—horses 4, cows 20, sheep 54, swine 16, young neat stock 10.

Amount of sales in 1838, \$2250. Expenses—labor, board and team, \$1125.

Crops—hay 55 tons ; wheat 39 bs. ; Indian corn 300 bs. ; rye 300 bs. ; oats 1000 bs. ; potatoes 500 bs. ; ruta бага 100 bs., other vegetables 30 bs. ; butter 300 lbs. ; beef 1500 lbs. ; pork 5200 lbs. ; new milk cheese 3000 lbs. ; wool 180 lbs. ; cider 40 bbls. ; winter apples 100 bs.

XIII. AGRICULTURAL STATISTICS.

I might extend these reports, having through the kindness of many friends in the county received a considerable number of returns. These however, will be sufficient as specimens of the general husbandry of the county. To these I subjoin a document which I am persuaded will possess much interest. That is a complete return,

made with as much exactness as the nature of the case admitted, of the agricultural produce of the town of Pittsfield. I was anxious, in order to give a just and impartial view of the husbandry of the state, to obtain, from some prominent town in each county, such returns as are here presented. I have, to a degree, succeeded, in respect to Berkshire, Franklin, Middlesex and Worcester ; and I cannot but express the hope that they will induce the Legislature to procure such returns occasionally, say once in five years, from every town in the Commonwealth. The value of such statistics to the public would be very great ; and their influence upon the habits of our farmers, in leading to exactness of measurement and calculation, inquiry and observation would confer an immense benefit.

Inaccuracies may have crept into the estimates. This could not be avoided ; and in a first attempt there are always difficulties to be encountered, which disappear on a second trial ; but every effort has been exerted to make it as true as under the circumstances it could be. On the original document the name of every farmer is given ; but as it might lead to invidious comparisons or remarks, or wound the diffidence of some, if I should give the names to the public, I avoid it. I am exceedingly desirous during the progress of the survey, that my intercourse with the farmers should be as free as possible ; I am desirous, likewise, that any statement which I give to the public should rest upon responsible authority. But I shall never give a name to the public without express permission, or in a case where, I think, consent, if asked, would be withheld.

Value	No. of Acres	Wheat	Oats	Rye	Barley	Corn	Hay	Other	Total
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1	321	150	100	140	100	100	100	100	100
2	10	3							

3	100	10							
4	100	13							
5	130	15							
6	80	3							

7	100	30	150	10	10	10	100	100	100
8	5	2							

10	50	10	80	4	4	4	100	100	100
11									

12	100	30	10						
13	30	6							
14	5	2							
15	100	30							
16	40	10	10	10	10	10	100	100	100
17	30	6	30	7					

18	30	7							
19	40	10	20						

20	100	40	20	40	20	20	100	100	100
21	100	40	20	40	20	20	100	100	100
22	100	40	20	40	20	20	100	100	100
23	100	40	20	40	20	20	100	100	100
24	100	40	20	40	20	20	100	100	100
25	100	40	20	40	20	20	100	100	100
26	100	40	20	40	20	20	100	100	100
27	100	40	20	40	20	20	100	100	100
28	100	40	20	40	20	20	100	100	100
29	100	40	20	40	20	20	100	100	100
30	100	40	20	40	20	20	100	100	100

Returns of Agricultural Products of

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Peas.	Pota- toes.	Ruta Baga.
1	374	150	100	140			600			1200	1800
2	10	3									
3	100	15	60	13	60		60		5	100	20
4	100	15	50	4	60		120		4	40	
5	130	15					80			100	
6	30	5	20				10			50	
7	80	18	75				100			100	50
8	100	20	175	12	10	12	650	100	10	400	
9	4	2									
10	75	10	50		4		50			100	
11	8	3	5				25			25	
12	35	12	20				35			40	
13	56	6					45			70	
14	5	2			6					20	
15	100	25	20				80			100	
16	42	10	10			12	100	22	10	450	
17	22	6	35			7		9		200	
18	80	20	65	6				15		250	
19	27	7					25			30	
20	40	10	20				50			150	300
21	215	45	40	25	40		80		20	150	200
22	128	35	35	10			40			150	
23	36	20	50	26			120			300	300
24	19	8	30	6			50			75	20
25	250	40	35	6	20	20	250	8	14	400	300
26	135	30	15	15			75			200	

Pittsfield, Berkshire Co., for the year 1838.

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
400	2800		1400	936	350	6	4	6	3	1000
			250	160			1	1		
	100		800	300			3	3	1	45
10	140		700	275			2	3		70
	240		300	50			1	1		80
			300	200			2	2		
	125		300	150			1	1	2	50
	150		1100	150			4	1		95
			300	150				1		
	75		400	25			2	2	1	10
							1			
			300	300			1	2	4	
			100	150				1		
			150	150			1	1		
	140		400	300			1	2		40
		800	500	300			1	2	2	
				150				1		
	75	700	350	150			2	2	2	33
			300	200			2	2		
10			600	500	225		2	4	1	
	800		800	200			3	1	2	300
		500	800	500	300	4	1	6	5	90
			800	625	150		2	5		
40			400	200			1	2		
	150	1800	450	400			2	3	1	84
	55		450	400	100	2	3	4	6	

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Peas.	Pota- toes.	Ruta Baga.
27	60	18		15			20			400	
28	80	20	30	20			50		25	350	
29	73	20	40	14			200			60	
30	200	40	100	30			50	60		300	
31	18	8									
32	83	40	60	15			20			50	
33	20	24	60							375	
34	325	90	80	80			500		30	700	700
35	100	40	80	15	30		50		20	350	100
36	30	7	60				50			100	
37	100	50					150			350	
38	120	20	35	50			100			150	
39	525	160		16	280		600			1300	1700
40	72	20	20		40		100		2	200	
41	80	15	30	16			200	10		200	
42	60	12	30		40		80			140	
43	40	8									
44	20	6	20				50	20		100	
45	30	15		15						50	25
46	53	20	6				25		20	230	
47	200	40	20					50		500	
48	56	7	6		30		50	10		100	
49	110	45	15	21			130	35	8	300	
50	226	45	25	17	75		60	75		250	500
51	50	10	70	17			50			100	
52	105	20	50	20	75		80	15		80	200
53	285	50	50		100		200	20	18	300	

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
	25		300	200			2	3	1	10
	80	600	800	100	100	2	1	2		30
	30	800	600	150		2	2	4		10
	300	4000	500	400	300	2	3	4	9	80
			500	400				3		
			300	100			1	1		
			750	300	200		1	3		
150	1400	1200	1300	450		2	2	4	2	500
	300		1100	600			2	4	5	125
	30			150			4	1		10
		2400	750	200		4	3	7		
	50	550	665	200	200		3	3	4	23
	1200	6000	1400	300		4	4	3	25	400
	270		679	200	150		2	3		100
			600	150			3	2	2	
	50		700	100		2	1	3		30
	60		400	100			3	2	8	
	56	650	600	200	300	2		3	10	29
	300	600	650	200			2	2		63
30	19		350	375	100		2	2		
		2500	600	700	1000		1	6	19	
	350	2400	800	100		2	2	1		
	50		300	100			3	1	1	15
	100		700	100	300	2	5	4		40
	150	1200	800	700	100	2	3	11	2	

[illegible]

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
	120	700	250	200	50		3	2		43
	30	500	250	100			1	1	3	13
		550	300	300	300	2	1	3	8	
	50	6000	600	200		2	1	2	4	15
	550	700	600	300	300	6	3	5	8	230
	120	600	750	400	300	2	2	5	4	14
	25	175	260	175			2	1	1	9
	300	550	900	500	700	2	1	5	1	110
	50	300	500	300			2	2		15
	20		600	300	400		1	4		9
10	100		900	300	300	2	1	3		43
	500	1200	1900	700	500	2	4	8	9	200
	60	800	1000	200		2	1	3		29
	9		300	200			1	1		9
	200	550	1000	500	300		2	3		103
		200	275					1		
			500	100		2		1		3
			600	200				2		
	235		650	300			1	2		120
			200	100			1	2		
			300	150				1		
			230	100			2	2		
	450	500	600	400		2	2	4	8	150
	150	800	700	400			2	4		40
	60		300	75			1	2	1	22
	40		500	300	200			2	1	13
			250	100				1		

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Peas.	Pota- toes.	Ruta Baga.
81	7	2								75	
82	7	4½	30				25			125	100
83	130	25	20				70	12	25	400	
84	75	15	25	16			300	33	30	250	
85	5	2	30				25			50	
86	100	25	60	26			300	15		300	1000
87	160	35	40		40		60			300	
88	212	60	50	45	100	25	100		20	800	600
89	40	10	20	25						150	
90	1									100	
91	4	4	30							125	
92	200	40	150	20	35		100		20	300	
93	72	16	60	20	10		45			200	100
94	2	4					40			30	
95	1									175	
96	1						25			150	40
97	2	2	25				40			100	
98	7	3	50				30			150	
99	1½		50							40	
100	250	60	100	100			300			650	800
101	300	100	120	50	100		200		10	600	500
102	150	20	30			15	300	5		350	150
103	80	12	25		40		100			125	
104	42	8	50		8		85	38	4	250	
105	100	30	250	30	80		40		20	700	
106	40	10	10	9	20		50	5		60	
107	87	18					200			125	

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
				125				1		
			400	300	300			2		
	150		800	600	300		2	2		60
	30		420	200			4	2	1	6
			200	100			1	1		
	175	800	1000	750	200		5	5	2	70
	200	900	900	450		2	1	3	3	72
450	400	2500	600	600		2	2	4		125
			330	50			2	1		
			274				1			
			400	150			1	1		
	400	700	900	600			3	4	2	175
	150		500	300	100	2	3	2	1	55
			500				4	1		
			600	250				1		
			600	400				2		
			300	150				1		
	9		500	300				2		3
			700				1	3		
	1200	1400	1000	400			2	2	2	400
	800	5500	1700	500	600	4	5	5	13	300
	20	100	1500				2	3	8	12
	50		550	250	75		3	2	3	39
	40	570	600	200			1	2	2	15
	300			100			2			130
		700	600	400			2	4	2	2
	50	2700	700	400			2	3	6	14

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oa's.	Buck Wh't.	Pease.	Pota- toes.	Ruta Baga.
108	80	20	80	8			60	7		200	
109	135	20	30		100		150			300	50
110	20	6	40				20		10	200	
111	125	30	80	25	75		100		10	280	
112	86	25	30		18		75	12		200	
113	109	23	50	6	50		100			600	
114	18	6					50			100	
115	100	14	60	20	40		110		30	200	
116	43	10	12				60			80	
117										100	
118	8									100	
119	44	30	40				200			150	
120	20	5								65	
121	48	12	80	8			100			125	
122	88	40	175	65			300			700	200
123	4		40							1200	
124	15	5	75		75					75	
125	300	75	300	36	160		200			300	
126	13	4	98	14			40			156	
127	16		50	7			17			35	
128	4									50	30
129	125	25	50				25			500	
130	18	45					50			300	
131	200	50	50	20	50		100	15		300	
132	72	10	60			212			5	275	250
133	100	30	50	20			100			300	
134	50	12	60	20	20		60			200	

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
	30	400	750	300			2	2	1	10
14	40	700	850	200	100		4	4	6	20
	18	700	600	100			2	2	2	11
			600	200			2	1	2	100
	240	600	700	700		2	2	2	4	40
	80	700	800	300		2	2	2	2	40
			300	300			1	2		
	100	600	1000	200	200		2	4	1	60
	20		300	100			1	1		8
			300	150		2		1		
			400	200				2		
			1500				22	5		
			400				1	1		
			200	100				1		
50		1700	1500	700	200	6		9	6	
			900							
			780				3	1		
	120	13,700	1100	500	400	2	2	5	22	60
			680	200			2	2		
5		150	160	100			3	2	2	
40			250	300				2	1	
100		1300	2400				5	8		
	40	400	1250				1	3	2	
50		450	500	600	100	2	1	3	5	15
		650	500	200			3	1	1	13
	200	600	650	300			2	2	1	55
50			500				2	4	1	14

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Pease.	Pota- toes.	Ruta Baga.
135	7	2								50	
136	110	25	70		5		100			300	
137	60	10	15				50			150	
138	75	40	140	24	20		200		3	200	200
139	75	15	25		18		100		30	250	
140	3	4½	20				55		27	50	
141	95	50	40	10			230		2	300	
142	80	15	35	50	50		100			150	300
143	32	7	20	80	15		40		20	500	
144	100	35	30	90	15		375		10	500	120
145	4		40	5					8	75	
146	150	40		50	50		400			300	
147		5					50			200	
148	80	18	80	50			30			350	
149	400	118	380	70	57		300			750	300
150	400	100	150	20	50		350			800	40
151	500	250	50	150	120		500			1200	300
152	206	59	30	110			200	212		600	
153	80	12	10	14			40	9		100	
154	148	25	65				45			400	300
155	80	20	70	60			275			150	
156	40	10	13	40			100			400	
157	100	25	10	20			40			250	40
158	7	5					40			125	
159	70	10							6	130	
160	150	40	60	40			120		22	350	
161	130	15	50	35			250			400	

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
			650				2	1		
	200	600	500	600		2	2	4		70
			300	300				2		
100	40	800	800	800	300	4	3	4	10	34
	60	900	1000	300			2	2	4	30
		700	560	400			1	2	1	
		700	600	625			1	5	6	
	120	600	750	400	300	6	3	4	5	18
			600	300			2	2		
	100		700	500	600	2	1	5	6	32
	200	1800	600	400	200		2	4	4	100
			400	100	100				1	
	300	800	1200	1300		2	3	13		14
	300	3800	400	700	1000	4	3	48	48	84
	1000	4100	4000	600	800	8	5	15	14	100
	700	4000	7000	1200	2000	6	10	24	35	300
40	175	1300	2300	725	1000	2	1	11	11	64
			300	125			1	1	4	10
			800	400			2	3	2	
			750	200			2	2	2	
			1000	300			2	4	4	
	220		750	200			2	2	2	
			500	100			1	1		
							2	1	1	20
	50	500	800	500	500		4	5	17	30
	300		600	300			3	2		120

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Pease.	Pota- toes.	Ruta Baga.
162	6	2	15				10			150	
163	67	15	35				25		5	100	15
164	140	15	40	26	75		175		20	200	175
165	56	20	75	20	15	15	75		10	200	
166	80	20	30	15			100			175	
167	30	2	75	20			80			100	
168	15	3	20	10			50			180	20
169	2									400	
170	23	20	15				100		33	200	
171	35	25	50		25		135	7	18	150	1100
172	36	8	15	8			50			100	
173	200	100	200	50	100		300		45	2000	300
174	180	50	35	25			200			300	
175	220	150	180	97	200		500		18	1500	1500
176	12	8	20				110			400	
177	200	90	80	60	60		150	30		300	
178	150	50	100	25			100			350	
179	90	30	65	20			250			250	
180	35	10	30				150			250	
181	240	100		40	450		600			600	
182	105	25	60	25	35		100			125	25
183	230	75	100	85	60		230			600	
184	150	60	120	50	25		125			250	
185	400	110		20			800			500	
186	20	6	20				30			80	
187	8	4	40				116			70	70
188	50	20	40	18	5		120	30		100	100

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
			400	100			1	1	1	
	25		400	300	300		3	2	1	8
	150	1400	800	1000		2	2	6	12	40
		700	600	600			2	4	1	60
	20		800	600				3	4	14
			200	100				1		
			350	300			2	2		
	60		250	150		2	2	2	1	20
	25	600	300	200			2	2		10
	30		400	300	200		2	2		10
	40		500	300			1	2		15
	1000	4000	3000	1000	500	6	4	8	10	200
	360	800	500	300	300		3	3		140
150	1800	10,000	1400	800	800	4	4	8	11	700
300			900	350			2	4		
150		2000	1000	600		8	3	5	15	50
420	450	900	1200	700			3	5	6	105
			500	300			2	2	1	90
			700	300			2	2		
	1000	2000	1400	500		2	2	5	8	350
	50		800	200	100	2	3	5	4	16
	450		1500	600		4	2	5		280
	300	750	600	600	500	2	7	4	8	75
	1500	4500	1000	500	300	2	2	4	4	650
			500	300			1	2		
			400	300			3	2	1	
	150		600	300	100		3	3	2	62

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Pease.	Pota- toes.	Ruta Baga.
189	118	25	50	30			200	30		300	150
190	70	20	20	8			150	4		75	10
191	150	40	100	10			200	10		300	125
192	20	10								100	
193	300	75	100	17			180			350	
194	127	40	25	12			500		10	500	100
195	150	40	80	75			110			600	
196	30	4								200	
197	100	15					150			200	
198	90	15	10	30			175			200	
199	230	90	100	12	150		150			250	
200	200	40	50	20	20		100	25	15	400	
201	160	30	70	10	110		100		25	300	
202	80	40	100	25	50		150	10	5	400	
203	200	90	100	30	15		200			400	
204	87	20	100		20		150	10	10	100	
205	24	5	15				16	5		70	
206	10						300				
207	6	2								120	
208	350	80	175	25	25		450			550	175
209	300	80	100	60	25		180			800	100
210	70	12	15				40			200	
211	35	12	60	30			70			200	
212	10	5								100	
213	50	10	40	40			30			300	
214	150	18	30		100		300		20	400	
215	25	5	20				50			100	

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young Cattle.	Sheep.
	150		600	300	170		3	3	2	70
	65		500	100			2	2	1	26
	450		800	200	100		4	3		147
			500	200			2	2		
30	900		1000	450	428		2	4	3	350
	300	1600	900	400	400		3	4	2	110
	200		700	700	300	2	2	4	2	25
			500	400		2	2	2	1	
	207			200		2	2	2	1	90
	207		600	150			3	2		90
	250	4700	900	300	700	2	3	6	20	140
	275		800	400	200	3		3	7	100
	45		500	300	150	4	1	3	4	14
	450		500	200	100		4	3	3	150
	275		550	400			2	4	3	100
	140		550	100			2	1	3	200
		600	700	300			2	2	3	
							8			
			450	250			2	2		
	1080		750	300			3	2		600
100	600	1000	1000	1500	200	2	2	10	2	280
	30		600	100			1	1		10
	40		300	100			1	1		15
			500				1	2		
	300		300	200			2	2		100
	100		800	500	500		2	4	1	40
			500	100			1	1	1	

Farms.	No. of Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Pease.	Potatoes.	Ruta Baga.
216	45	15	40	10			100			250	
217	100	40	60	30	70		170			200	
218	300	80	50	41			130			450	100
219	180	50	80	24			50		10	400	500
220	180	50	150	80	50		50		30	300	600
221							300				

Kept by others than farmers, 20 Horses—100 Cows.

AGGREGATE

Of the above Returns from Pittsfield, Mass. Procured by S. L. Russell, December, 1838.

No. of Acres,	-	-	20,260	Wool—pounds,	-	-	36,740
Hay—tons,	-	-	5,058	Beef,	"	-	136,245
Corn— bushels,	-	-	9,963	Pork,	"	-	133,513
Wheat,	"	-	3,674	Butter,	"	-	58,046
Rye,	"	-	4,676	Cheese,	"	-	26,048
Barley,	"	-	318				
Oats,	"	-	25,191				
Buck Wheat,	"	-	1,073				
Pease,	"	-	820				
Potatoes,	"	-	59,311				
Ruta Baga,	"	-	17,256				
Carrots,	"	-	2,864				

LIVE STOCK.

Horses,	-	-	475
Oxen,	-	-	183
Cows,	-	-	812
Young Cattle,	-	-	625
Sheep,	-	-	13,687

Carrots.	Wool.	Beef.	Pork.	Butter.	Cheese.	Oxen.	Horses.	Cows.	Young C ttle.	Sheep.
	200		700	800	800		2	5	3	60
	200	750	600	600	400	2	1	5	7	80
	600		1400	1000	300	2	3	8	4	200
175	500		700	400	1300	2	1	9	4	175
	300		1300	400	300	2	4	5	11	110
			500				12			

NOTE.

It will at once occur upon examination, that the foregoing returns by no means embrace the whole of the agricultural produce of the town. No account is made of fuel and timber of various kinds; none of milk used in families; of poultry consumed and sold; of garden-vegetables; none of fruit, cider, &c. &c.

No returns are made of corn-fodder, which, when well cured, most farmers consider equal to the best of hay, ton for ton; and which, allowing 35 bushels of corn and two tons of fodder to an acre, would amount to 568 tons. No account is made of straw, which, allowing 25 bushels to an acre of wheat, rye, barley and oats, and $1\frac{1}{2}$ ton of straw, would have amounted to 1971 tons.

Some small amount of maple sugar was made in the town—one farmer having made six hundred pounds; others, perhaps, as much. This, as I shall show hereafter, is destined to become a valuable product of the state; several towns, in the spring of 1838, having made twenty, some thirty, and some nearly forty thousand pounds. I have two returns, of over thirty thousand pounds to a town, in Franklin county, ascertained. H. C.

XIII. AGRICULTURAL SOCIETY.

The county of Berkshire has been many years distinguished for its agricultural society, which, in intelligence, enterprise, and public spirit is second to none in the country. It is remarkable likewise in respect to this society that in every part of the county, among the farmers themselves, who, as a class of men are generally distrustful of the advantages of such associations, and seem in such matters oftentimes as well skilled as their oxen in the art of "holding back," its utility is universally acknowledged and a strong interest felt in its success. They are every where disposed in this good matter to pull together ; and it would, as it seems to me, be difficult to find, what is technically termed an "off" ox in the team. I regret that I cannot say the same things of all the agricultural societies and all the farmers in the state. If the farmers do not take a strong interest in these institutions, who can be expected to ? The state has for a long time extended a liberal patronage towards them ; and the money bestowed, if properly applied, would be productive of immense benefits.

All agree that in respect to the county of Berkshire, the best effects have resulted from its agricultural society. It has every where excited and cherished a spirit of generous emulation ; and men of the highest distinction in the county for education, character, political standing and wealth give their time and zeal to its excellent objects.

The society called the "Berkshire Agricultural Society for the promotion of Agriculture and Manufactures," was incorporated 25th February, 1811. It has received the annual grant of the government amounting to 600 dollars per year ; and has bestowed it in various premiums upon stock, agricultural improvements, and crops. Their first ploughing-match took place on the 7th October, 1819. Since that time the society have held a cattle-show, exhibition of domestic manufactures, and a ploughing-match every autumn. It is holden for two days ; and the farmers and the farmers' wives and daughters, lending their encouraging aid and presence to this rural and delightful festival, are congregated from all parts of the county. Applications for premiums on cultivation are made early in the season ; and a committee is delegated to visit the premises of every claimant, and examine the growing or standing crops which are

entered for the honorary notice of the society. As I understood the mode of examination adopted by the committees, it was much more matter of judgment than of exact measurement. In all cases of grain-crops or of other crops, which admit of an accurate ascertainment, this should be insisted upon by the society before bestowing the premium ; and where exactness cannot be reached, it should be approached as nearly as possible. In addition to this, the claimant for the premium should be required to give a full and detailed account of his cultivation, the nature and condition of the soil, the manures used, quantity and kind, the quantity of seed, the kind of seed, its preparation and time and manner of sowing, the after-cultivation of the crop, the mode of harvesting, the use and value of the crop, the whole expenses, and every important circumstance connected with it. So also in regard to dairy-produce, or the rearing of live stock, the whole history of the management and manufacture and preservation of the former, and the origin, good qualities and treatment of the latter, should be given before a premium should be conferred. I believe this is not done.

In regard likewise to the presentation of live stock for premium, it seems to me, that the particular history of every animal should be given before the animal can claim a premium. If a milch cow is offered for premium the claimant should be required to state her age, and parentage ; the qualities on the side of the dam for milk or butter, if they can be ascertained ; the race by which she was sired ; the mode of rearing her ; the time of coming in with her first calf ; the number of calves she has had ; how her calves have proved if they have reached an age to be tried ; her milk, its amount in any twenty-four hours, or week, or month, in pounds or in cubic measure, and whether ale or beer measure ; the amount of cheese made from her ; or the amount of butter in any given time, or from any given quantity of milk or cream ; and precisely the mode of her having been fed during the time ; and how long she remains in milk. On these and other particulars exact information should be sought and required. So likewise in regard to a bull presented for premium, his history and pedigree should be required ; and, if of an age to be ascertained, the character of his stock should be reported ; their growth, thriftiness, their feeding or milking qualities.

No fatted animal should receive a premium unless his age, his

weight, his gain for six months or a year, his mode and cost of feeding are all given. No male animal of any kind offered as valuable for propagation and so deemed by the committee, should receive a premium unless security is given that he shall be kept in the county for a certain length of time for the benefit of the stock. I could not learn that any such requisitions were made. It was said that such requisition would diminish the competition ; and that the premiums were not large enough to compensate for the trouble it would impose upon the competitors. In regard to the latter objection, reduce the number and increase the amount of premium. As to the former objection, if such requisitions as are here suggested are not complied with, the objects of the public bounty are not attained. Premiums in such cases are not intended to reward the efforts of industry and skill excepting as such rewards are adapted to excite the industry and skill of others. They are designed to stimulate to trials and experiments in order to ascertain or demonstrate what can be done ; and secure for others the benefits of such experience by showing *how* things can be done. A premium for example is offered for dairy produce, for amount and quality. A claim is made on account of an unusual quantity and extraordinary quality. The fact of an unusual quantity being obtained is important as showing what can be done ; but it is even more important to know how it was obtained. If a premium is given for its superior quality, the principal object of the premium obviously is to obtain for the agricultural public a knowledge of the method by which such excellence can be attained.

It is an observable fact in the reports of the committees of the past year, at the last cattle-show, in respect to crops for which premiums were awarded amounting to the large number of thirty-nine, there is not a single specification of the quantity raised to the whole field or on an acre, excepting as relates to the products of some three fourths of an ounce of mulberry seed ; nor the least intimation of the condition of the land, the manures applied, the seed sown, the mode of cultivation and many other particulars from information in regard to which the farming community might derive the greatest advantage ; and indeed the precise advantage for which the premium was designed.

So likewise in regard to animals with the exception of some cattle, sheep, and swine presented merely for exhibition from New York and Vermont, there is not a single instance in which any ac-

count is given of the origin, stock, weight, mode of raising, mode of feeding, quantity of produce in milk, butter and cheese, and in truth the proper object of such premiums, the extending of practical information of which others might avail themselves, is not at all attained. This is a material omission, which, I can but hope, a society so eminently distinguished for its agricultural enterprise and improvement as this, will see in its just light.

I shall take leave farther to suggest, that in my opinion, the subjects of premium proposed by the Berkshire Agricultural Society, are too limited, and might be extended with great public advantage.

At the commencement of the institution, it appears, they began with a special donation for the best farm—that is, in their own words ; “for the best cultivated and organized farm, the best arrangements as to economy and cost of buildings, fences, farming utensils, farm and fold yards, and other conveniences comprehending animals, and the best systems of rearing and breeding, and the management of manures, \$35.” This proposal seems to have been immediately discontinued ; no decision upon it is recorded, and it does not appear to have been renewed.

Farm-management would be a very proper subject of premium. But when it is proposed that it should embrace so great a variety of matters as it is generally supposed to comprehend, and as would seem to be expected in what should be considered a pattern-farm, few farmers have the courage to enter the lists. Few or no farms combine that variety of husbandry, which is thought to be expected by the society, in any farm offered for its honorary notice. Indeed a large portion of our farmers are so restricted in their means, and have so much to do to sustain their families, and in general no spare capital to invest, that few ever aim at what may be called completeness in farming. Instead, therefore, of requiring for premium what may be called a complete system of farming, or domestic management ; it would be advisable to offer premiums for excellence or distinction, skill, judgment, labor and success, in specific branches of husbandry. The great agricultural interests of Berkshire, are, for example, the sheep and the dairy husbandry. Let as large a premium as can be afforded, be given to the best management in these departments.

Let a standing premium be offered for the best sheep-farm, and let the requisitions for success embrace all the items connected with this subject on which information is most desired and needed ; as for example : the number of sheep kept should not be less than —, and the account required by the board should embrace their whole history and management ; their kind ; the quality of their wool ; the amount of wool to a fleece ; their cost of keep ; their feed ; the kinds of feed ; the quantity required to any given number ; the value of hay, straw, Indian meal, oil meal, potatoes, turnips, carrots, cabbages ; the number pastured on an acre ; the value of pasturage ; the average number of lambs raised to any number of ewes or any mixed flock ; the number of bucks required to a flock ; the time of lambing ; the mode of managing sheep at the time of lambing ; the comparative value of ewes and wethers ; the utility of salting or withholding salt from sheep ; the age to which sheep may be advantageously kept ; the time of shearing ; the mode of washing sheep ; the mode of preparing the fleece for market ; the loss in weight, if any, which the fleece suffers from keeping ; comparisons of profits or advantages among the different breeds ; the results of crossing with different breeds ; the raising of early lambs for market ; the fattening of wethers for market ; the most eligible condition, age, modes of feeding, and kinds of feed ; the proper construction of sheep-pens, racks, mangers, cots, houses ; the comparative advantages or disadvantages of housing or exposing sheep ; the ordinary diseases and accidents to which sheep are liable, and the remedies or preventives ; and many other particulars, which are important, and would naturally suggest themselves to any practical inquirer.

The next subject of premium might be, for example, a dairy-farm, whether of butter or cheese, and this likewise should embrace its entire management. The number of cows should not be less than —. The competitor should be required to state their number, age, breed ; whether raised or not by himself ; mode of raising calves ; feed of cows ; pasturage ; value of land for pasturage ; number of acres required for a cow ; winter-feed ; hay ; corn-fodder ; vegetables : such as turnips, carrots, parsnips, pumpkins, Indian, rye, oat, or oil meal ; their quantities and comparative value from actual trial and observation ; cost of feed ; pounds of hay or vegetables consumed in any given time ; trials of cooked or uncooked

feed ; of simple or mixed ; cut or long feed ; time of milking ; management of milk ; setting of milk for cheese ; mode of preparing and keeping rennet ; of breaking and draining curd ; of pressing ; best form of press ; time the cheese is kept in press ; coloring cheese : anointing cheese ; capping or covering cheese with cloth ; quantity of milk required for a pound of cheese ; mode of sending cheese to market ; loss in weight by keeping ; value of whey for swine ; butter from whey ; quantity obtained and uses to which applied ; number of swine kept compared with number of cows ; number of hands required in milking a given number of cows ; female help required, and cost of such help in making and managing the cheese. So likewise in regard to a butter-dairy, it should embrace every important particular in the management of the stock or the manufacture of the produce—as for example, in addition to the above as far as they are applicable to butter, all the particulars should be required as to the mode of salting the milk ; the kind of pans, whether earthen, wood, or metal ; whether the milk be scalded or not ; how long allowed to stand before it is skimmed ; whether butter be made from milk or cream, and comparative advantages of using either ; temperature of the cream when churned ; usual time of churning ; kind of churn ; cream, how kept ; milk-room or cellar ; deep or shallow pans, and which most eligible ; advantages of putting water in milk when set, if any ; of freezing milk, if any ; butter, how worked when taken from the churn ; salt used ; quantity and kind ; modes of preparing butter for market ; of packing butter for keeping ; trials of the butter ; qualities of the milk of different cows, by a lactometer or by weight ; quantities of milk or butter made by individual cows ; quantity of milk or cream required for a pound of butter ; and in all cases of application for a dairy-premium samples of butter and cheese ; and of a wool-premium, at least a whole fleece properly done up to be sent for the inspection of the Board.

There are other subjects of premium of the highest interest and utility ; premiums which should apply to matters of an experimental character. The best experiment in fattening swine, with a view to ascertain the comparative value of roots or grain, or different kinds of roots and different kinds of grain ; the age at which they are best fattened ; the gain in pastures, the gain in sty ; upon cooked food,

upon raw food ; the average gain per day, per week, per month ; the best construction of a sty ; the best modes and machines for cooking food for swine ; the diseases and accidents of swine ; the cost, and the profit and loss of such experiments. All these are matters on which information of an exact and authentic character is greatly needed ; and the obtaining of it would constitute a very proper subject of premium. So also the best experiments in raising early lambs, and managing ewes ; in raising calves and young stock, and in fattening cattle, with all the particulars and details incident to those operations, being made matters of premium, might elicit the most valuable information.

The application of manures, the composting of manures, the comparative efficiency of different kinds of manures, with exact records and observations of their application, and their particular results on different soils, are subjects on which information, practical knowledge, is greatly desired, and should be sought after by every practicable mode.

I might proceed to other matters of inquiry worthy of being subjects of premium with this enlightened and enterprising society. But after these suggestions it may be best left to their own judgment. The great object of all agricultural premiums should be to awaken agricultural experiment and enterprise, in cases where information is most needed ; and to obtain that information in so exact, detailed, practical and authentic a form that it can be made at once available to all the farmers in the county. This rule being made paramount, the lists of premiums in all our agricultural societies might be amended and enlarged ; and a strong spirit of inquiry awakened by the objects proposed, and the particular form of interrogatory in which these proposals should be presented.

I know I shall not give offence to the public-spirited and intelligent farmers of the Berkshire Agricultural Society in directing their attention to these points, which I do with all possible respect.

The practice of giving the premiums in some durable form of plate, and of announcing and bestowing them in public, is a peculiarity of arrangement highly to be approved. It creates a strong interest and excites a noble emulation. The usefulness and permanency of the article of premium greatly enhances its value. I was often, in my visits in the county, delighted with seeing these honorable re-

wards, in the form of spoons, or tumblers, or cream-pots, brought out ; in remarking the honest and laudable pride with which they were exhibited ; and in the agreeable reflection that they would go down as valuable heir-looms to other generations and stimulate their generous ambition. Agriculture in all its moral aspects recommends itself to the regard of every good mind. Emulation in this business awakens none of the bad passions, which are so often engendered by rivalry in other departments of life. One man's success in agriculture never injures his neighbor ; but always tends to the general benefit. There is in agriculture no monopoly of improvements and advantages ; and every effort, discovery, experiment, or invention by which the improvement of the art is assisted, its respectability advanced, and its productiveness increased, is a direct, substantial, and permanent benefaction to a town, to the country, and to the world.

XIV. MISCELLANEOUS MATTERS.

Mount Washington at the south-western extremity of the county and of the state, seen in almost any aspect, is a noble elevation ; and as you first come in view of it on the road from Stockbridge to Great Barrington, presents an object of peculiar beauty and grandeur. The ascent of this mountain either from Guelder Hollow on the north-east, or the beautiful valley of Kopeck on the west, is long but not difficult ; and after having ascended about two miles you reach an extended area of rolling country surrounded on three sides by a line of different summits, which appear from several points of view below as forming only a single prominence. The whole mountain is comprehended in the township of Mount Washington ; and in this area there are some valuable farms, mainly devoted to the grazing of cattle and the sheep husbandry.

1. MANUFACTURE OF CHARCOAL. The growth on Mount Washington is principally chesnut and white birch with some maple and oak. A great business of the inhabitants on the mountain, and of many persons in the neighborhood, is the conversion of this wood

into coal of which 100,000 bushels are stated to be annually made. Two and a half cords of wood are required to make 100 bushels of coal. By good management two cords will produce 100 bushels. The wood standing is valued according to the accessibility of the situation, at from 50 to 75 cents per cord. A kiln of a common size contains from 25 to 30 cords. The chopping of two cords for a kiln is considered a day's work for a man. Collecting and drawing together on good ground requires five days. The covering of a kiln requires three days' work. The burning of a kiln is twelve days' work. The coal brings $12\frac{1}{2}$ to 13 cents at Hudson, about 24 miles distance and $5\frac{1}{2}$ to $6\frac{1}{2}$ at Riga Iron Works, near the northern line of Connecticut. Many farmers engage in it only in the intervals of their farm-work. One farmer in the neighborhood made the last year 1200 bushels; and another made and sold coal to the amount of six hundred dollars, which was a convenient and pleasant item in the products of his year's labor.

An experienced observer and farmer, who has lived under this mountain for nearly half a century, says "that the chesnut wood on land where it is cut off will replace itself in about thirty years."

2. MARBLE QUARRIES. The marble quarries in Sheffield are well worth a visit. Here are obtained the stones for the Girard Orphan College in Philadelphia; and the works are now prosecuted with great spirit and labor. The blocks for the columns are to be of an average measurement of six feet in diameter; three feet in thickness; to be rounded and rough hewn. The undertaker pays the workmen at the rate of 130 dollars per block when fitted for transportation. The distance of land carriage to the Hudson is 24 or 26 miles. The cost of each of these blocks when delivered in Philadelphia is 500 dollars. They are taken by ox-teams over the mountain about five miles; and then by horse-teams to the river. They are ingeniously raised, and suspended under wheels of large diameter and great strength. Seven tons is not an uncommon load; 13 tons have been taken at a time. After the block is split from the quarry one man is occupied about three weeks in rough hewing it. They can now reach the rail-road from Hudson to Stockbridge in a distance of a few miles; and will probably use this method of transportation. The number of horses kept for the conveyance of the stone,

nine pairs of horses being not an infrequent team, and the men employed in quarrying the stone, have made large demands for agricultural produce. In looking at the facts in this case, it is curious to observe the chain of connexion running through the multiplied and ramified interests and relations of human life ; how actions and affairs of remote countries and distant times spread their roots in every direction, and penetrate to a wide extent of time and place. Thus the revolutions in St. Domingo, which occurred nearly half a century since, and first laid the foundation of the mammoth fortune of this Philadelphia merchant, are now setting in motion the industry and increasing the comforts and wealth of the farmers of Berkshire ; and promise to extend a beneficent action and influence upon the intellectual and moral interests of mankind through the generations of all future time. So full of importance and pregnant with incalculable consequences is every event and action in human history ; a mixed web, whose thread Omniscience only can trace and unravel.

3. NATURAL SCENERY. The natural scenery of this county combines, in a high degree, the beautiful, the grand, and the picturesque. There is an intermingling of so much that is charming and tasteful in rural life with so much that is lovely, elevating, and magnificent in the aspects of nature, that a benevolent and philosophic traveller, in winding his way through the favored valley of the Housatonic, finds his imagination aroused to its highest capacity of enjoyment, and his benevolent and grateful affections continually warmed and expanded. I have a strong faith in the influences of natural scenery upon the mind and character. The grandeur of nature inspires nobleness of thought ; and lofty thoughts bring in their train noble and comprehensive affections. The sublimity of a towering mountain makes the bosom heave with kindred emotions ; and a prospect, which is bounded only by the horizon, gives an enlargement of mind, which spreads by sympathy into every other department of thought and feeling. What is immense and comparatively limitless in nature powerfully stimulates the sentiment of religious veneration in the heart ; and by a natural process conducts the mind to the contemplation of the infinitude, the power, and the perfection of the Creator.

It is among these high hills and mountains, where men are trained in the habits of simple life and of self-reliance, that the spirit of free-

dom and independence may be expected to linger and retain a home, if she should be put to flight in those parts of our country where, among a crowded population, the low and stagnant air is poisoned by avarice and sensuality. When driven from every other part of Europe, she took refuge in the mountains of Switzerland. Her flame could not be quenched even among the glaciers of the Alps. It burnt brightly in the bosom of the brave mountaineer, who, in looking from his eyrie-nest upon the broad expanse below, above, and around him, felt that liberty was the proper element of the human soul. There, under this generous impulse, was raised that beacon-light of liberty, which will serve as the signal of defiance and triumph to the oppressed ones of the earth in all coming time. The county of Berkshire is distinguished by a highly cultivated, intelligent, active, enterprising, and truly republican population. They owe it to the kindness of divine Providence, which has cast their lot in a signally favored location, to encourage and stimulate to the highest degree, among themselves, the spirit of agricultural, intellectual, moral and social improvement.

4. THE GIANT'S STAIRCASE. Among objects of natural curiosity, there is one in the south-western part of the county, but little known even among the inhabitants, which will amply repay the labor and time required to visit it. It is on Mount Washington and is designated by a vulgar Dutch name, which no one who understands it, must ever be asked to interpret. Until a more classical name is invented it may be called the Giant's Staircase. It is a deep and tremendous chasm or cleavage in the rocks on the western side of Mount Washington, which combines much that is grand and terrific; and is destined to become an object of great resort to the lovers of the wild and romantic in nature. In the spring of the year, the waters, from the line of summits before described, collect in the central area and uniting their streams force themselves in a torrent by several successive leaps, and down successive steps through this tremendous chasm in the rocks into the Kopeck valley. I visited it late in summer when the water was low and the stream small; but it was then exceedingly striking and beautiful. The lower fall where the silver cascade descends perpendicularly in a glittering pillar of foam, about seventy feet, resembling the inverted plumage of a bird of para-

dise, only of brilliant whiteness and filled with gems, is seen, to the best advantage from below. The passage through the chasm, where you are compelled to creep over an abyss of terrific depth, is in its present condition sufficiently startling and perilous ; and not to be advised until some means of security are furnished other than a bridge of two decayed saplings extended over this chasm. But the passage may at a small expense be made secure ; and will afford to those who have a taste for such exciting objects great delight. The lofty arched chamber of great dimensions, about mid-way of the passage, is very grand. Several intelligent writers have pronounced the Giant's Staircase as an object of curiosity, worthy to be associated with some of the most picturesque and sublime objects in nature, which are to be found in our country.

XV. DESIRABLE AGRICULTURAL IMPROVEMENTS.

1. AGRICULTURAL CAPACITIES OF BERKSHIRE. The county of Berkshire is eminently designed for an agricultural county. It abounds in excellent and permanent water-powers, and is already thickly sprinkled over with manufacturing villages. These establishments, as far as they call upon the farmer to supply from his industry the raw materials of their fabrics tend directly to excite and reward that industry. While they withdraw some considerable portion of the population from the labors, who are nevertheless to be sustained by the products, of the field, and introduce a considerable population from abroad, they present a quick and the best of all markets, a home-market for his produce. Besides this, to a large portion of the county some of the largest markets in the country are directly accessible. The farmer in Berkshire raises nothing worth raising for which he cannot find an immediate sale. The soil and climate are favorable to cultivation. In ordinary years wheat is successful ; oats are abundant ; potatoes and vegetable esculents yield an ample return ; and with the exception of what are emphatically termed the cold years, Indian corn has succeeded as well as in any part of the state. Rough

as some of the land is, there are few cases in which, where it can be ploughed at all to advantage, a pair of horses will not plough more than an acre per day. The sheep husbandry has been pursued with great success ; and the best breeds of fine-wooled sheep are to be found here. The dairy produce of many of the farms is not surpassed by any accounts of other parts of our country, or of foreign countries, which I have been able to obtain. It will be seen likewise from the statements of the farmers of the county themselves, and those certainly among the most intelligent and practical, that there is no crop well cultivated, which does not yield an ample return and compensation to labor.

2. **EXCLUSIVE HUSBANDRY.** Yet with all this it must be admitted that the agriculture of the county in extent and productiveness is far below what it should be. As well as I could learn, Egremont is almost the only town in the county, which raises not only its own bread but has some for exportation. Vast amounts of flour, grain of various kinds, pork and dairy produce are brought into the county from the neighboring states of New York and Vermont. It was asserted as a fact, and if so it deserves notice, that two years since some families in one of the best towns in the county were without bread of any kind for a time from the impossibility of obtaining it. They were persons for example who worked for the large wool-farmers. They asked for money for their labor ; but money was not to be had because the clipping of wool, owing to the derangements of business, had not been sold. They asked to receive their pay in grain ; but the wool-farmers had abandoned all cultivation for the sheep husbandry. They asked for their pay in pork, but the farmers who raised no grain could raise no pork. Now whether this be a true history or fabulous, it illustrates clearly the error committed in abandoning the production of grain. On a sheep-farm, especially, to neglect all cultivation is evidently throwing away one of the great advantages which would accrue to an arable farmer from the abundant supplies of manure, which the sheep might furnish. It may be said that the manure made by the sheep is applied to the grass lands. But it is clear to my mind that in this way it will produce little profit compared with what would come from using it in a proper rotation of cultivated crops. The same mistake is in some cases made by

the dairy-farmers in abandoning all cultivation for the dairy. Now to say nothing of the advantages to be derived in the support of the stock and the increase of the produce both on the sheep and the dairy-farm from an abundant supply of esculent vegetables and grain ; yet the neglect of the advantages to be gained in such cases from the ample supplies of manure, which might be obtained by proper management, is a great practical error. A stock farm and an arable farm, unless in the most untoward circumstances, should be always conjoined ; and thus the beneficent institution of divine Providence be constantly regarded in causing the earth to be replenished and enriched by its own products. This is one of the beautiful laws in the constitution of nature ; and as certain in its operation as is man's obedience to its dictates. When man performs his part, nature is never wanting in hers.

3. DOMESTIC ECONOMY. In looking over my returns, I was struck with the remark of a man of much practical wisdom and one of the best farmers in the Commonwealth. He says " that a farmer should produce upon his farm all those supplies for his family, which the farm can be made to yield." In his case this is done within doors and without ; for there the spinning-wheel has not forgotten to turn round, nor the shuttle to speed its flight. In this cottage, whose neat and beautiful arrangements cannot be surpassed, the clothing, the bedding and the carpeting were all the product of their own fields and flocks. I shall not soon forget the unpretending and hearty hospitality of these enviable dwellings. I have slept many a time under a silken canopy, and trodden many a carpet as soft as the pride of eastern luxury could make it ; but never with any thing like the sentiment of honest pride and independence with which I saw here the floors spread with carpets made from their own flocks, which for fineness and beauty the foot of a princess need not disdain ; and on a cold night slept in woollen sheets from their own looms as soft as the shawls of Cashmere ; and wiped my face with towels spun with their own hands from their own flax, of a whiteness as transparent and delicate as the drifted snow. In such beautiful examples of domestic management, it is delightful to see with how limited means the best comforts and luxuries of life may be purchased. Nor were these instances few. The county of Berkshire abounds with

examples of this domestic comfort and independence. Much to be regretted will be the change, which has already invaded many parts of the state, when under the pretence of superior cheapness, these household fabrics shall give place to the more showy but flimsy products of foreign industry ; and the healthy exercise of domestic labor and household cares shall be deemed degrading in our wives and daughters ; and exchanged for the idleness and frivolities of pride and luxury.

I agree entirely in the sentiment above expressed, that every farmer should, as far as possible, supply the wants of his family from his own farm. He should supply himself with bread, meat, vegetables, milk, butter, cheese and clothing, as far as his farm can be made to do it. He can almost always do it at a less expense than he can purchase these supplies. The labor requisite for this purpose may often be given at times when it would not otherwise be occupied ; and by hands for which there might otherwise be no employment. The sentiment of self-respect and self-dependance, inspired by such a course, is a great gain. The satisfaction of eating bread raised by one's own labor is not small ; and various and important moral influences, which I shall not now discuss, render it altogether desirable ; though in some cases the same amount of labor consumed in their production, if applied in other ways, would purchase a larger amount of the same supplies. Though the supply of our own great wants from our own farms might seem, however, in some cases to be a *pecuniary loss*, it is always in the end a *moral gain*, with which the pecuniary loss is not to be put in competition.

4. INCREASE OF CULTIVATION AND PRODUCTS.—The county ought likewise to determine to supply their own wants, by their own labor, and from their own soil. This is the only certain and substantial independence. Instead of being in agricultural produce, an importing, they might become an exporting community, of bread, and beef, and pork, as well as of dairy-produce and wool. Instead of raising one bushel of corn, they should raise ten. Instead of being satisfied with two hundred bushels of potatoes, they ought to raise two thousand, and so in this proportion. The farming in general, excepting some cases of dairy and sheep husbandry, is on too small a scale to afford much profit. In all the statements of man-

agement, addressed to the Massachusetts Agricultural Society, by those who have entered the lists in the competition for the premiums on farms the present year, every applicant, with hardly an exception, seems to plume himself upon the small amount of labor with which he has managed his farm. If the expense of labor is small, compared with the amount of land cultivated, the improvements made, and the products obtained, this may be matter of merit. But if it is made a boast that little labor has been employed, because in truth, little land has been cultivated, and little produce grown, it is rather matter of discredit than of commendation. Agriculture can never be eminently successful in Berkshire, until more capital is employed, more labor expended, and more produce raised. The great object of every farmer, I speak of men who pursue farming as merchants pursue trade, and manufacturers pursue manufacturing, should be to produce as much as they can; and to spare no labor nor expense, while labor and expense can be profitably applied to this single object of production. The cultivation of esculent vegetables as food for stock, ought to be a prominent object of attention to the Berkshire farmer. The amount of vegetables raised one year by a farmer in South Lee, viz. two thousand bushels of ruta бага, from two and a half acres of land, and twelve hundred of carrots from two acres, and his opinion of carrots as food for stock, as given in page 92 of this report, and the opinion of a farmer in Pittsfield, of the value of vegetables for stock, in page 101, deserve particular attention.

5. COMPARATIVE VALUE OF HAY, VEGETABLES, AND CORN.

—I wish briefly to draw the attention of farmers to the value of hay, compared with other crops, for the feeding of stock. An acre of hay yields one ton and a half of vegetable food. An acre of carrots or swedish turnips, will yield from ten to twenty tons; say fifteen tons, which is by no means an exaggerated estimate. It has been ascertained by experiment, that three working horses, fifteen and a half hands high, consumed at the rate of two hundred and twenty-four pounds of hay per week, or five tons one thousand and forty-eight pounds of hay per year, besides twelve gallons of oats each per week, or seventy-eight bushels by the year. An unworked horse consumed at the rate of four and one-quarter tons of hay in the year. The produce, therefore, of nearly six acres of land is necessary to

support a working horse by the year ; but half an acre of carrots, at six hundred bushels to the acre, with the addition of chopped straw, while the season for their use lasts, will do it as well, if not better. These things do not admit of doubt. They have been subjects of exact trial.

It is believed that the value of a bushel of Indian corn in straw and meal, will keep a healthy horse in good condition for work a week. An acre of Indian corn which yields sixty bushels, will be ample for the support of a horse through the year. Let the farmer, then, consider whether it be better to maintain his horse upon the produce of half an acre of carrots, which can be cultivated at an expense not greatly exceeding the expense of half an acre of potatoes, or upon half an acre of ruta бага, which can be raised at a less expense than potatoes, or upon the grain produce of an acre of Indian corn, or on the other hand, upon the produce of six acres of his best land in hay and grain ; for six acres will hardly do more than to yield nearly six tons of hay and seventy-eight bushels of oats. The same economy might be as successfully introduced into the feeding of our neat cattle and sheep.

These facts deserve the particular attention of the farmers who are desirous of improving their pecuniary condition. It is obvious how much would be gained by the cultivation which is here suggested ; how much more stock would be raised ; how much the dairy-produce might be increased ; and how much the means of enriching the land, and improving the cultivation, would be constantly extending and accumulating. But when we find on a farm of two hundred acres, that the farmer cultivates only two acres of potatoes, one acre of ruta бага, and perhaps a quarter of an acre of carrots, we call this "getting along," in the common phrase ; but we can hardly dignify it with the name of farming. I am aware that labor of a proper kind is in many cases difficult to be procured, and with our habits, as difficult to be managed. Farming, likewise, can in few situations be successfully managed, unless the farmer has capital to employ, equal at least to one year's manure and one year's crops. A large portion of our farmers, also, from the nature of their habits and style of living, are so prosperous and independent, that they have no occasion to extend their cultivation beyond what it now is, in order to meet their wants ; and to incur all the trouble, vexation, and risk of

employing more labor, expending more capital, and increasing their cares.

But it is not fair to produce such instances as any examples of the profit or unprofitableness of husbandry, when carried on, as all other branches of business, to be successful, must be carried on, with intelligence, skill, industry, enterprise ; and all the capital and all the labor which can be advantageously employed in it. I will not, however, anticipate such general views of the subject, as I propose to take in the retrospect of the whole survey.

6. **APPLES.**—I should recommend strongly to the farmers of Berkshire, the cultivation of apples. The orchards are comparatively few, and many have been neglected from the best of motives, an unwillingness to favor the facilities of intemperance. But the value of apples for fattening pork and beef and even for milch cows, so well established by innumerable experiments, and in some cases rated as highly as potatoes, recommends them most strongly to increased attention and universal cultivation. The borders of our fields may be lined with them ; the road sides may be planted with them ; they may be scattered over our pastures, with little or no injury to the crops or the pasturage, if properly arranged.

7. **RAISING OF LIVE STOCK.**—The raising of early lambs for the New York market, and of fattening mutton, may be made sources of much profit to the Berkshire farmers ; but many important facts which I have on this subject, will be brought into another report.

Great success has attended the raising of neat stock in the county, and finer stock of the kind, principally, though not entirely of the Devon blood, than I found on the farm of George Hull, of Sandisfield, and John M. Hurlbut, of Great Barrington, is seldom to be seen. They evince the very best management. I might mention other cases ; and of course in my excursions I can have seen but comparatively little of what exists there ; but these examples recurred strongly to my recollection. These gentlemen are well satisfied with the profits of their stock-husbandry ; and the facts prove that the raising of stock in Berkshire, with proper judgment in the selection, and care in the management, would afford an ample profit. The Shakers have been eminently successful both at Tyringham and Han-

cock, in raising stock. Attempts have been made at crossing the North Devon with the Improved Durham, on the farm of the former gentleman at Sandisfield, and it is said a superior milking stock has been obtained. I have known other instances of this same cross, with like success ; and in some parts of England it has been greatly commended. The great difficulty to be contended with in the introduction of the Improved Durham Short Horns into our state, will be found in the expensiveness of their keep, and the care which they require. It is universally admitted by their warmest friends, that they consume much more food than our common stock ; and cannot flourish under exposure, and the neglect with which our stock is usually treated.

Attempts have been made, likewise, in Otis and Sandisfield, to introduce the long-wooled sheep, the Dishley or New Leicester. Four bucks of this variety were exhibited at the cattle-show, in Pittsfield, the last season ; and the joint live weight of two of these animals was 640 lbs. A cross between the Leicester and the Merino has been tried here, and is favorably reported. The experiment of thus mixing the long and the fine and short wools together, has heretofore been attempted. The first and second crosses have given satisfaction ; afterwards it has not been approved. All highly bred animals are of tender constitution, and require great attention to keep up the improvement. A cross of the Dishley or Bakewell with the large sheep of our native stock would be an undoubted improvement.

8. COMPOST AND LIQUID MANURES. Manures are the very sinews of agriculture ; its food ; its life-blood. To this matter the attention of the farmers of Berkshire cannot be too strongly directed. I have spoken urgently on this subject in another place ; but I am extremely desirous that the farmers should be impressed with its importance.

It is well established that all animal manures have most efficacy when applied in the greenest state. They are then most active ; and their chemical effects upon the soil are immediate and powerful. In a direct application to the soil, however, they cannot be very thoroughly intermixed ; and on this account, without question, they are less efficacious than they would be, if uniformly distributed and thoroughly incorporated with the earth. To effect this object in the

best manner it is desirable to form them in compost heaps, with other substances ; mud, scrapings of yards, scrapings of roads, sods or decayed vegetable matters of every description ; and even simple loam or mould, or any substance which will act as a retentive absorbent. Thus compounded the liquids of the manure will be retained and the escape of the valuable gaseous effluvia prevented ; and by being thoroughly and equally intermixed and diffused, the whole mass becomes a valuable and efficacious manure. The amount of manure in this way is greatly increased ; and it is believed, that one part of green animal manure combined in this way with two parts of mould, swamp-mud, decomposed peat, and even some portion of clay, will prove quite as serviceable as if the whole mass were animal manure applied in a raw and unmixed state. Some intelligent farmers maintain that the proportion of animal manure or dung requisite to impregnate a large mass in compost is much less than I have allowed. This can be always favorably done in a well constructed barn-yard. The bottom of a barn-yard ought always to be kept well covered with loam or mud, or other matters to absorb the liquids of the yard. But it may often be done to advantage, where the manure on a field designed to be cultivated is seasonably carried out and mixed with mould obtained from the headlands to form the heap, which being turned over and worked up once or twice, will then be fit for use.

There is another matter, to which I invite the attention of the Berkshire farmers ; that is, the saving of liquid manures. In the best districts on the continent of Europe, the liquid parts of manure are considered in every respect equal to the solid. There provision is made for saving and compounding them with the greatest care ; in stone and water-proof vaults formed under their cow-houses. In our dairy districts especially, where large herds of cows are kept, a great amount of this manure might be secured by vaults, formed under the stalls with spouts leading into them. With a view to the same object likewise, the cattle instead of lying in the yards at night, should be always tied in the stalls. If the barn is properly ventilated, and the stalls littered, they will lay as comfortably and securely as in the yards ; and the saving of manure would much more than pay for any extra trouble, which it might be supposed to involve. These are homely subjects but as important as they are homely. Doubling our manures is quadrupling our crops ; and whoever will look with disdain

upon a manure-heap is indifferent to some of the most wonderful and beneficent operations of the divine Providence ; and to the most remarkable and instructive lessons of religious philosophy.*

XVI. MACHINERY.

1. **DRILL-BARROW.** A useful drill-barrow has been invented by Samuel H. Bushnell of Sheffield, of a simple construction, and small expense, by which the sowing of small seeds is well and expeditiously performed. Indian corn may also be planted with it. A good one has likewise been made by Allen C. Metcalf of Lenox, both of which have received the honorary notice of the agricultural society.

2. **THRESHING-MACHINE.** The threshing-machine in general use through the county is one made in Hillsdale, N. Y. I was not able to learn, whether it was patented or not ; or any particular name by which it is designated. It performs its work well and with despatch. It is moved by three horses or by two yoke of oxen. The thresher is placed on the barn floor, and is connected by a belt with the moving power, to which the cattle are attached, in the yard. The whole can be put into a small wagon and easily conveyed from place to place. The cost is 75 dollars. With proper attendance, I was told that 120 bushels of wheat or 300 bushels of oats might be threshed by it in a day. The 300 bushels of oats seemed to me a large statement ; and of course it must take several assistants to hand and take away and tie up so many sheaves.

3. **SMOKE-HOUSE.** Moses Spurr in building a smoke-house, separated it into two parts by a brick partition, with openings in the partition to admit the passage of the smoke. The meat is hung in one apartment ; and the fire is made in the other. In this way the bacon or meat is thoroughly smoked without any danger of dropping or dripping into the fire, or of being injured by hanging too near the

* Appendix G.

fire. This is a small matter, but deserves notice. Many of the best conveniences of life are little matters ; and any one can make an egg stand on the small end after being shown how.

4. **WATER-WORKS.** The barn of Cornelius Bassett at Lee, whose farming is highly creditable to him, stands on a side hill near his house, at a distance of perhaps thirty or forty rods above a small stream, which flows at the foot of the hill. On this stream he has erected a wheel, which carries a forcing pump ; and through logs the water is thrown in a steady stream directly into his barn-yard. This is a miniature of the Fairmount Water-Works on the Schuylkill ; and a pleasing and useful operation.

XVII. CONCLUSION.

I am unwilling to protract this report, though I have necessarily passed over many things deserving of notice, and have done imperfect justice to subjects which I have treated ; but I have the less reluctance in the case, from the fact, that in other reports, should the Government deem the survey worthy of a continuance, I shall have opportunities to recur to them.

I cannot close without expressing my pleasure in witnessing the universal prevalence of a spirit of improvement throughout the country. I should do serious injustice to my own feelings if I did not express, likewise, my grateful sense of the kindness and courtesy which I every where experienced ; my high appreciation of the many valuable acquaintances and friendships, which I have formed ; and my sincere respect for a people eminently distinguished by that intelligence, refinement of manners, order, and good morals, which constitute the honor and happiness of the social state.

This is a small matter, but it is a matter of principle. Many of the best circumstances of the are in the matter; and any one can make an error on the small and after being shown how.

Water-Works. The plan of Corcoran House at 1-100, which is highly creditable to him, stands on a side hill near his house, at a distance of perhaps thirty or forty rods above a small stream, which flows at the foot of the hill. On this stream he has erected a wheel, which carries a forcing pump; and through the water is thrown in a steady stream directly into his barnyard. This is a miniature of the Water-Works of the city of New York; and a pleasing and useful operation.

XVII. CONCLUSION.

I am unwilling to present this report, though I have necessarily passed over many things deserving of notice, and have thus imper- fect justice to subjects which I have treated; but I have the less re- luctance in the case, from the fact, that in other reports, should the Government deem the survey worthy of a continuance, I shall have opportunities to recur to them.

I cannot close without expressing my pleasure in witnessing the universal prevalence of a spirit of improvement throughout the coun- try. I should do serious injustice to my own feelings if I did not ex- press, likewise, my grateful sense of the kindness and courtesy which I every where experienced; my high appreciation of the many val- uable acquaintances and friendships, which I have formed; and my sincere respect for a people eminently distinguished by their intelli- gence, refinement of manners, order, and good morals, which con- stitute the honor and happiness of the social state.

At the same time, I cannot but regret that some of our country- men are still in the state of ignorance and error, and that some are still in the state of poverty and distress. I am sure that the people of this country are not less capable of improvement than any other people, and that the progress of knowledge and civilization is not less rapid here than elsewhere.

APPENDIX.

[A.]

METEOROLOGICAL TABLES.

I—*Letter from ALLEN C. METCALF, of Lenox, to the Commissioner of Agricultural Survey.*

LENEX, *January 22, 1839.*

MR. HENRY COLMAN :

Dear Sir,—In compliance with your request, I now proceed to give you a recapitulation and results of my Meteorological Journal for the years 1837 and '38, together with some miscellaneous observations connected with it, relating to the progress of vegetation in the spring and summer—the time of sowing and harvesting crops, &c. &c.

In reference to the place at which these observations are made, I would state, that my location, as you know, is on elevated ground, not subject to the scorching heats of summer, to which many places are exposed, nor to the extremes of cold in winter, it being somewhat protected by surrounding trees. I have found, from observation and experiment, that in very low situations the mercury indicates greater degrees of heat and cold than in more elevated, so that I consider my situation favorable for obtaining the true *medium* temperature.

LATITUDE AND LONGITUDE OF LENOX.

Lat. 42° 18'—Lon. 73° 20'.

METEOROLOGICAL OBSERVATIONS FOR 1837.

Mean Temperature and range of the Mercury in each month. Weather.
No. of Days.

	Highest.	Lowest.	1st ½ mean.	2d ½ mean.	Monthly mean.	Whole range.	Fair.	Cloudy.	Rain.	Snow.	Gage of water in inches and 100ths.	REMARKS.
Jan.	47	—12	15.39	17.63	16.51	59	11½	15		4½	1.58	
Feb.	46	—12	18.33	20.48	19.40	58	8	16	2	2	1.68	Highest degree in the year, 90.
Mar.	54	—10	22.26	31.63	26.94	64	11	12	4½	3½	4.24	Lowest degree,—12.
April	76	21	36	40.55	38.58	55	11	15	4		2.47	Whole range of the mercury, 102°.
May	86	24	49.22	53.55	51.38	62	15½	7½	8		6.17	Greatest monthly range, 68.
June	88	47	61.75	59.65	60.70	41	13	11	6		5.65	Mean temperature of the year, inclusive, 41.09.
July	90	48	62.25	63.20	62.75	42	16½	8½	6		2.62	Warmest day, August 9th.
Aug.	89	44	65.21	61.13	63.17	45	10½	16½	4		2.08	Coldest day, February 13th.
Sept.	87	32	56.66	52.38	54.02	55	21½	7½	1		.99	First severe frost in Autumn, September 2d.
Oct.	77	20	49.29	43.16	42.72	57	15	15	1		2.04	
Nov.	73	5	34.66	34.49	34.55	68	12½	15½	1	1	.85	November the driest, and May the wettest month.
Dec.	56	—7	25.99	19.08	22.53	63	11	18	1	1	2.10	

Total fall of Water, . . . 32.47 Inches.

Mean temperature of winter, including December of the last year, . . . 20.17	Snowy days, . . . 12
Mean of spring, . . . 38.96	Prevailing winds,—North.
Mean of summer, . . . 62.20	
Mean of autumn, . . . 43.76	
	March 30th—Robins first seen.
	“ 24th—Blue-birds first seen.
Fair days in the year, . . . 157	April 16th—Frogs first heard.
Cloudy days, . . . 157½	May 18th—Barn-swallows seen.
Rainy days, . . . 38½	“ 18th—Plums and cherries in blossom.

My observations for this year are not as full as will be found in the year 1838.

P. S.—Observations at the thermometer taken at sunrise, and at one, and nine, P. M.

METEOROLOGICAL JOURNAL, LENOX, 1838.

Recapitulation and Results.

Mean temperature, and range of the mercury in each month.							Winds—No. of days—from each point of compass.							Weather—No. of days.					
	Highest.	Lowest.	1st $\frac{1}{2}$ mean.	2d $\frac{1}{2}$ mean.	Monthly mean.	Whole range.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	Fair.	Cloudy.	Rain.	Snow.	Gage.
January, .	61	-5	32.53	25.52	29.03	66 2	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$1\frac{1}{2}$	$12\frac{1}{2}$	$4\frac{1}{2}$		$9\frac{1}{2}$	14	$13\frac{1}{2}$	2	$1\frac{1}{2}$	2.46
February, .	46	-3	32.9	10.90	14.14	49 $5\frac{1}{2}$	$1\frac{1}{2}$				$2\frac{1}{2}$	$1\frac{1}{2}$	2	15	$13\frac{1}{2}$	12		$2\frac{1}{2}$	1.52
March, .	55	1	31.26	34.54	32.90	54 8	7		4	3		1	8	$17\frac{1}{2}$	9		$4\frac{1}{2}$	.96	
April, .	65	16	34.87	3 .92	35.89	49 $2\frac{1}{2}$	$5\frac{1}{2}$	$\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	$2\frac{1}{2}$	$\frac{1}{2}$	$13\frac{1}{2}$	15	12	$1\frac{1}{2}$	$1\frac{1}{2}$		1.30
May, .	80	29	46.02	57.25	51.62	51 $2\frac{1}{2}$	4	2		8	$1\frac{1}{2}$		12	$18\frac{1}{2}$	$6\frac{1}{2}$	6			3.94
June, .	86	50	65.59	66.08	65.83	36 $2\frac{1}{2}$	3	1	4	$8\frac{1}{2}$	$3\frac{1}{2}$	1	$6\frac{1}{2}$	$18\frac{1}{2}$	$6\frac{1}{2}$	5			3.63
July, .	91	45	71.77	62.42	67.09	46 $7\frac{1}{2}$	$\frac{1}{2}$		$1\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	3	$12\frac{1}{2}$	24	6	1			3.64
August, .	86	45	67.28	63.83	65.55	41 2	$4\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$6\frac{1}{2}$	2	1	14	$20\frac{1}{2}$	$7\frac{1}{2}$	3			7.60
September, .	77	37	53.10	57.32	55.21	40 4	5	$1\frac{1}{2}$	$1\frac{1}{2}$	$7\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{2}$	$8\frac{1}{2}$	$16\frac{1}{2}$	$8\frac{1}{2}$	5			6.54
October, .	72	20	48.60	37.38	42.99	52 $\frac{1}{2}$	2	$\frac{1}{2}$	2	$7\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	$13\frac{1}{2}$	$11\frac{1}{2}$	$13\frac{1}{2}$	5	1		5.04
November, .	60	0	37.86	24.20	31.03	60 3		$\frac{1}{2}$	$\frac{1}{2}$	$11\frac{1}{2}$	$\frac{1}{2}$	1	13	$14\frac{1}{2}$	11	4	$\frac{1}{2}$		3.97
December, .	40	-2	23.50	19.14	21.32	42 $1\frac{1}{2}$				$8\frac{1}{2}$	$5\frac{1}{2}$	$1\frac{1}{2}$	14	$19\frac{1}{2}$	$7\frac{1}{2}$		4		.75

Total fall of Water, 41 inches and 35 100ths, snow included.

Whole range of the mercury in the year, 96°
 Highest degree, 91
 Lowest degree, -5
 Mean temperature of the year, 42.74
 Mean temperature of winter, including December of last year, 23°
 Mean temperature of spring, 40.14
 Mean temperature of summer, 66.15
 Mean temperature of autumn, 43.07

Warmest day in the year, July 10th.
 Coldest day in the year, January 31st.

On 100 days the mercury rose to 70° and above—on 36 of which it rose to 80° and above—and on 4 to 90°. At 11 different times it sunk to zero and below.

Lightning and thunder have been noticed on 13 days. First on the 23d of June—last on the 23d September. Prevailing winds N. W.

There have been 203 fair days in the year—114 cloudy—32 $\frac{1}{2}$ rainy—and 15 $\frac{1}{2}$ snowy.

The *summer* of this year has been most delightful, and the fruits of the earth, particularly *Indian Corn*, have come to full maturity.

Miscellaneous Observations.

March 2—The trees beautifully ornamented with frost.

“ 22—Singing of birds first noticed.

“ 23—A foggy morning—first Robin.

“ 24—Harrowed ground ploughed in autumn.

April 6—Commenced ploughing.

April 7—Sowed seeds in my hotbed—Frogs first heard.

“ 11—Sowed wheat. 12th—Sowed oats.

“ 24—Finished sowing thirteen acres of oats.

“ 25—Deep halo around the sun.

“ 29—A fine soft atmosphere to-day.

Miscellaneous Observations—Continued.

April 30—A sudden change of 30° to cold.	July 5 and 20—Sharp lightning and heavy thunder.
May 4—Sowed wheat. 12th—ditto.	" 26—Have cut twelve acres of hay up to this date.
" 14—Corn planted in various places.	Aug. 4—Harvested wheat sown April 11.
" 16—Sowed wheat.	" 7—Harvested oats sown April 12, 13.
" 17—Planted Dutton corn, which ripened finely.	" 18—Harvested wheat sowed May 16.
" 22—Plum and currants in blossom.	" 26—Frost in low grounds.
" 23—Lightning and thunder first noticed.	" 29—Finished haying.
" 25—A bright halo round the sun.	Sept. 3—A general <i>white frost</i> .
" 30—Apples in blossom. Set out fir-trees.	" 5—A dense fog.
Planted potatoes 28th, 30th, 31st of May, and 1st of June.	" 13 and 15—Northern lights.
June 4—Apples in full blossom.	" 18—Great eclipse of the sun.
" 18—Chilly east winds.	Oct. 9—First <i>severe frost</i> .
" 26—Sowed buckwheat.	" 31—A <i>light snow</i> .
July 2—A severe thunder-storm in the night.	Nov. 18—Snow.
	Dec. 8—First sleighing.

Total fall of water, in 5 successive years, has been as follows, commencing with 1834,			33.21 inches and 100ths.
1835,	.	.	40.47 "
1836,	.	.	49.89 "
1837,	.	.	32.47 "
1838,	.	.	41.35 "
Total,			197.39 "
Mean fall of water, yearly,			39.47 "
Mean temperature of summer, 1837, 62.20—Of 1838, 66.15.			

As to any agricultural experiments of mine, I have succeeded in none worthy of notice that now occur to me, but will say a word concerning the best situation for fruit and ornamental trees, which are subject to being injured or destroyed by the extremes of cold in our latitude.

Since the cold weather of January, 1835, when the mercury sunk to 25 or 30 degrees below zero, and fruit and other trees were destroyed in different parts of the country, I have been led to notice the effects of severe cold upon trees in different exposures, and have found almost universally, that fruit and other trees, standing in sheltered situations, have been killed, when those of the same kind, standing exposed to a free circulation of air, have safely withstood the injurious effects of frost. This has, I doubt not, been noticed by yourself and others; if so, then perhaps my observation will tend to confirm this opinion.

One cause of this is supposed to be, that when a season of warm weather occurs in winter, or early in the spring, (as it often does,) it causes the sap to rise and the buds to swell prematurely in trees standing in sheltered situations—and then a sudden change to severe cold checks this circulation, and freezes the sap in the capillary tubes, thus

destroying the vital principle of vegetation in the tree. So that upon this principle it is advisable to plant such trees in open grounds.

There are undoubtedly other causes of trees in such situations being injured or destroyed when others are not, but which I cannot satisfactorily explain.

With regard to the destruction of the *Borer*, which infests the locust trees, I will merely state the facts of an experiment I made in June, 1836.

In the early part of summer of that year, at the time when the locust is usually growing most rapidly, I discovered that two beautiful trees of the common locust, in front of our house, appeared pale and sickly, and were not growing as others were, or as they had done the year previous; and on examining their trunks I found, to my grief, that great numbers of the borer were committing their depredations upon them, and that unless something could be promptly done to destroy these invaders, I must lose my favorite trees. I immediately took a half pint of spirits of turpentine, *without diluting*, (thinking I would either kill or cure,) and washed the trunks of my trees therewith, at the same time picking out with my knife and killing as many of the insects as could be found. In a week's time, the appearance of the trees was improved, though they did not grow much that year.

The next year I repeated the washing, though no borer could be found, and the trees grew well; and in June, 1838, they were growing as finely, and looked as flourishing, as any other trees.

In case any one should wish to make the experiment upon a large scale, the turpentine might be diluted with *muddy* water, (it would not mix with clear,) and would undoubtedly answer every purpose, and go much further.

It appears to me it would be a public benefit, and conduce much to the advancement of science and the benefit of agriculture, if the Commonwealth should provide for the procuring of meteorological observations, and pay a suitable compensation for performing the labors of such an office. The state of New York employs several such officers, who are connected with the schools and colleges of the state.

If keeping such a journal is a public benefit, why should not our own state patronize the object, and let it be connected with the agricultural, instead of the academical department of science. If any benefit is to be derived from observations on the various phenomena of the seasons, let it be directed towards advancing the interests of the agricultural community. The keeping of such a journal, is necessarily attended with considerable expense of time.

That of making the daily observations is but trifling, but the carrying of them out, and obtaining the various results, costs a good deal of time and labor. This, together with the purchasing of suitable philosophical instruments, amounts to quite an item of expense; but if one could receive a moderate compensation for his trouble, he would be induced to make other observations and experiments which might be interesting and useful. As it is, I cannot well afford it. And for this reason, I had discontinued my journal, as you know, but at your request commenced it again, and shall continue to keep it until I hear from you upon the subject.

I would suggest the idea, if any thing should be done by the Legislature on the subject, of having such a journal kept one at Boston, one at Worcester, or Northampton, and one at Lenox. A barometrical table should be kept in the journal.

Please excuse this long document.

Yours sincerely,

ALLEN C. METCALF.

II—TABLE FROM MEMOIRS OF AMERICAN ACADEMY, VOL. IV, PART I.

Comparative time of Flowering of several Plants in the Spring of 1817.

	Williamstown.	Brunswick, Maine.	Montreal, Canada.	Boston.	Albany.	New York.	Philadelphia.
Claytonia Spatulata. Spring beauty.	Apr.18	.	May 1	.	.	Apr.20	Apr.10
Tussilago farfara. Garden colts'-foot.	" 19	.	.	.	.	.	.
Ulmus americana. Elm.	" 21	May 2	" 10	Apr.20	.	" 11	.
" fulva. Slippery elm.	" 22	.	.	.	.	.	.
Pothos foetida. Skunk-cabbage.	" 22	.	.	.	.	.	Mar.13
Acer rubrum. Soft maple.	" 22	Apr.28	" 5	" 22	.	" 11	Apr.10
" saccharinum. Sugar-maple.	" 22	.	.	.	.	.	.
Sanguinaria canadensis. Blood-root.	" 22	.	" 1	" 29	.	" 26	" 15
Hepatica triloba. Liverwort.	" 23	.	.	" 20	Apr.17	.	" 6
Caltha palustris. Cowslip.	" 24	.	" 15	May 2	.	" 16	" 22
Alnus serrulata. Black alder.	" 24	May 3	.	.	.	.	Mar.24
Erythronium americanum. Adder-tongue.	" 26	.	" 14	" 9	.	" 15	Apr.14
Leontodon taraxacum. Dandelion.	" 30	" 12	" 15	" 4	.	.	" 22
Anemone nemorosa. Anemone.	May 2	" 5	.	" 2	.	" 19	" 15
Aronia botryapium. Shad-flower.	" 2	.	.	" 8	.	" 26	.
Fragaria virginica. Strawberry.	" 6	.	" 15	.	" 8	.	.
Uvularia perfoliata. Bell-wort.	" 3	.	" 15	.	" 13	.	.
Aquilegia canadensis. Columbine.	" 10	.	.	.	" 1	.	.
Pyrus malus. Apple.	" 15	" 29	" 25	" 18	" 15	.	" 20

[B.]

ON RAISING CALVES.

BRAINTREE, *January 13, 1838.*

REV. MR. COLMAN :

Dear Sir,—In answer to your inquiries respecting the mode which I have adopted in raising cattle, I can merely say, that I have, for ten or fifteen years past, preferred to raise calves that come in the fall of the year, rather than those that come in the spring, for two important reasons: the first, and equally important is, the great saving in expense. Those that I have raised within the above time, have not cost me more than one quarter part so much as those that I formerly raised. They used generally to be with the cow from eight to ten weeks. The usual quantity of milk which they took, was about eight quarts per day each; the common price of milk has been twelve and one half cents per gallon, and four cents per single quart, and more sold by the quart than by the gallon. Upon a calculation, you will see, that it would cost about seventeen dollars, upon the lowest price of milk, to prepare a calf to go to pasture; in addition, calves that are raised in the spring, generally come in when two years old, which I think too young; the cows are not so good nor so large, and will not hold out so long, having come to maturity too soon.

Another difficulty which arises from letting the calves take the milk from the cow, is, when you turn them to pasture they are very uneasy, continually bawling after their mother, eat but little, and fall away in flesh, and are often stunted. Those that are raised in the fall or winter, do not generally come in until they are two and one half years old, are much larger, and continue good cows much longer. The expense of raising them in the old way, has been so much, that scarcely a single calf is raised in this vicinity. Consequently our farmers have bought their young cattle from droves from different parts of the country, and have had no opportunity to select the breed, the result of which is a *miserable breed of cattle*. Now sir, the mode which I have adopted, (with great success) is: I take my calves (that come in the fall or winter,) from the cow when three or four days old, (as the case may be;) I take a small quantity of good English hay, and make a tea from it; I add a small quantity of milk, and a very little molasses to it. The

calf drinks it freely, and very soon becomes very fond of it, and having got the taste, will eat hay at three weeks old, with as much eagerness as a calf will usually eat grass at ten weeks old. As they increase in age, I decrease in the quantity of milk, unless I happen to have a large quantity of poor milk. I make the tea pretty strong, and give them about as much as they would usually require of milk, twice a day, with a few carrots cut up fine, and also, as much good hay as they will eat. The hay that the tea is made of is not lost, as the cattle will eat it all. I generally have a kettle with hay in it on the fire all the time; a small quantity of hay will make enough for morning and night. I have been very much indebted to the Hon. John Welles, of Boston, for the breed of my cattle; have had them of him; and without exception, I think his breed of cattle is by far the best in this country. I have found no difficulty in selling my cows, from fifty dollars to a much higher price. I think a calf may be raised till it is ten weeks old, in the manner I have adopted, for the small sum of three dollars—the trouble is but trifling. If the above remarks, or any part of them, are of any service to the public, they are at your service.

With much esteem,

Your friend, and

Humble Servant,

MINOT THAYER.

[C.]

CHEESE-SHELVES.

“Wilbur’s semi-revolving slide cheese-shelves is an admirable contrivance to save labor in the cheese-dairy. By it two men can easily turn twenty-four heavy cheeses in a minute, and are enabled to rub them without their being lifted from the shelves. The model consists of an upright frame, suspended by an axis passing through its horizontal centre; and into which slide eight pair of shelves, the distance of which may be graduated to the size of the cheeses. The cheeses are placed alternately above and below the axis. Slats are fixed upon the

back of the frame to prevent the cheeses falling out when the frame revolves. The frame is made stationary by a pin, and when this is withdrawn, it is made to revolve half round upon its axis, which turns the cheeses. The shelves over them, and upon which the cheeses have lain the preceding day may then be withdrawn, and left to dry till the next day, when they may be returned, the turning process repeated, and the other shelves cleaned and dried in turn. The improvement is a valuable one in large dairies. Henry Wilbur of Richfield, Otsego Co., N. Y., is the inventor."

Extract from a Letter.

"The saving in labor and risk of the cheese are great, and the expense of fitting up a new room on this plan, would not greatly exceed that in common use, as the room may be much smaller. One rack with six shelves, six feet long, twenty-four inches wide, set eleven inches apart, will hold eighteen cheeses weighing from 100 to 140 lbs. each, suspended by a wooden shaft two inches square, resting on two rails extending the whole length of the room, three and a half feet high, or if only a single rack, on two posts; each rack requires about four feet on the length of the rails, to turn well,—and its cost will not exceed six dollars including the materials of which it is made. On this system the cheese dries much faster, as it is turned on to the dry side of the shelf every day, and has a sound and dry rind. He has one set of extra shelves, which are slipped in close above the cheeses before turned, on which shelf the cheeses lay when turned over; the others are then liberated for another rack, and so on through the room. By the aid of these six extra shelves, the cheeses in turning need not fall but a trifle, if any."

[D.]

LETTERS FROM S. L. DANA, M. D., ON ASHES, LIME, &c.

LETTER I.

LOWELL, *February* 16, 1839.

Dear Sir,—You have asked me how the action of ashes, leached, or unleached, whether of wood, peat, or coal, is to be explained on my views of vegetation. The best answer I can give you, is to state what is the composition of ashes, and to glance at my views. By the last, I presume you refer to statements in Prof. Hitchcock's late report. I have there said that fertility depends on salts and *geine*. Without the last there is no healthy vegetation. The great body of the soil, in which salts and *geine* act, is only the comminuted remains of rocks, usually called primitive. We have termed this "granitic sand." We have thus three great, natural divisions of the ingredients of soil: 1st. *Geine*, 2d. Salts, 3d. Granitic Sand. Strictly speaking, we have two classes only, *geine* and salts, for the "granitic sand" is a mass of salts; a mass, in which *silex* acts as an acid, and alkalies, lime, magnesia, alumine, metallic oxides as bases, a mass of *silicates*. I prefer this term to granitic sand, and I shall hereafter use it. Let us now glance at these three divisions.

1. *GEINE*.—To my remarks, already published by Professor Hitchcock, I now add, that *geine* enters vegetables simply as *geine*, or as an alkaline, earthy, or metallic *geate*, dissolved either in water or in alkali. The organic and inorganic acids and salts of the plant, decompose these varied forms. The elements of *geine*, its oxygen, hydrogen, and carbon, play their usual part in vegetable economy. Acetic, and probably some of the other vegetable acids, do not precipitate the alkaline solution of *geine*. In this case, it may still circulate in fluid form in plants. The earthy and alkaline bases of the *geates* form the bases of the various salts which plants afford.

2. *SALTS*.—This class includes, first, compounds of *geine*; second, alkaline salts, potash, soda, ammonia, and all their combinations, known by the names of carbonates, sulphates, nitrates, muriates, &c.,

as common salts, soaper's *spent leys*, consisting chiefly of muriate of potash mixed with a peculiar organic compound called glyceine, salt-petre, ashes leached or fresh, urine, containing abundant phosphates and ammoniacal salts, soot; containing both ammonia and geine; third, lime, in all its forms, marl, shells, chalk, marble, air-slacked lime, plaster, bones.

3. **SILICATES.**—To have a distinct idea of this division of soil, let us tabulate the composition of argillite, and of the several simple minerals, whose aggregate composes primitive rocks. Though analyses, imperfect as they are, have not yet discovered phosphoric acid in all these aggregates, yet I doubt not, that accurate investigation will detect its presence in all granitic sand. Phosphate of lime is by no means an uncommon mineral in primitive rocks, and chlorides are widely diffused.

Table of the constituents of the elements of silicated soils or granitic sand.

One hundred parts of	Potash and Soda.	Silex.	Alu- mine.	Lime.	Magne- sia.	Oxide of Iron.	Oxide of Magne- sia.
Argillite, - - -	5 to 7	48	23	4	1.06	-	-
Quartz, - - -	-	93	6	1	-	-	-
Mica, - - -	8 to 9	47	34	-	-	1 to 2	1 to 2
Felspar, - - -	13 to 14	66	19	4	-	1	$\frac{1}{2}$
Hornblende, (including Trap Rocks,) - - -	-	42	12	11	2 to 3	30	$\frac{1}{4}$

Argillite contains notable portions of carbon. The source of this not only in this, but in other primitive rocks, I shall show elsewhere, is the *geine* and *geates*, held in solution in the water, from which these sedimentary rocks were deposited.

Sulphuret of iron is abundant in primitive rocks. Its decomposition produces with the silicates, sulphates of alkalies, earths, and oxides. Keeping in view the remark on phosphates and muriates, and we have then, at a glance, the inorganic elements of all plants.

Burning reduces these constituents to two classes: ashes and volatile salts. The last are found in soot. The ashes are formed of salts and silicates. These vary in quantity and quality, not only in different plants, but, as is well known, in different parts of the same plant. Let us take oak, beech, basswood, birch, as the types of the composition of

hard wood ashes, yellow pine,—(*pinus abies*)—as the type of soft wood ashes ; and wheat-straw as the type of the ashes of the grasses.

The average quantity of ashes, from 100 parts of dry oak, beech, birch, &c., is 2.87. Ashes are divided, by the simple process of leeching, into two parts, soluble and insoluble in water. 100 parts of hard-wood ashes thus afford—soluble, 13.57 ; insoluble, 86.43.

100 parts of the soluble contain :

Carbonic acid,	22.70
Sulphuric acid,	6.43
Muriatic acid,	1.82
Silex,	.95
Potash and soda,	67.96
	99.86

100 parts of the insoluble contain :

Carbonic acid,	35.80
Phosphoric acid,	3.40
Silex,	4.25
Oxide iron,	.52
Oxide Manganese,	2.15
Magnesia,	3.55
Lime,	35.80

Pine,—(*pinus abies*,)—100 parts dry wood afford only .0083 ($\frac{83}{10000}$), of ashes ; of which, 100 parts afford,—soluble, 50 ; insoluble, 50.

100 parts of the soluble contain :

Carbonic acid,	13.50
Sulphuric acid,	6.90
Silex,	2.
Potash and soda,	69.70
Water,	7.90
	100.

100 parts of the insoluble contain :

Carbonic acid,	21.50
Phosphoric acid,	1.80
Silex,	13.

Magnesia,	8.70
Oxide iron,	22.30
Oxide manganese,	5.50
Lime,	27.20
	100.

Wheat straw,—100 parts yield .044 of ashes ; 100 parts of which afford,—soluble, 19 ; insoluble, 81.

100 parts of the soluble contain :

Sulphuric acid,	0.2
Muriatic acid,	13.
Silex,	35.6
Potash and soda,	50.

100 parts of the insoluble contain :

Phosphoric acid,	1.20
Silex,	75.
Oxide iron,	2.50
Lime,	5.80
Charcoal,	15.50

Peat-ashes abounds in carbonate, sulphate, and especially phosphate of lime. I have always traced *free* alkali in peat ashes ; but alkali exists in it, rather as silicate, as in leached ashes. Anthracite coal ashes contain a carbonate of lime, alumina, and oxide of iron. It is good, so far as these abound.

The above are calculated on the analysis of Berthier, who has detected soda in the ashes of all plants. The elements are stated singly ; because we have thus at one view the amount of each, and, as I shall show, it is the base chiefly which acts. The agricultural value of ashes may be determined by reference to these tables. In what state these elements may be combined in plants, we can only determine theoretically. Thus, the phosphoric acid, by its affinities, would be united in the hard woods as above, with the lime and iron,—forming in each 100 parts of the insoluble portion of ashes, phosphate lime, 5.40 ; phosphate iron, 1.86.

Of the various substances which chemistry detects in the ashes, few probably exist in the living plant, in that state of combination, in which

we find them in ashes. Burning decomposes and recomposes them anew. We are by no means to conclude, because we find various salts in plants, that they existed as such in the soil. Of the soluble alkaline salts, probably none exist in the soil. They are products of vegetation educed from the composition of silicates and salts.

The composition of the *insoluble* part of ashes gives us nearly the constituents of *leached* ashes. If the soapboilers' process was as perfect as that which the chemist employs—still his leached ashes would show more lime, than the above tables, because he always employs a portion of lime to make his lye caustic. This is a variable portion; whatever it is, it adds so much to the value of the leached ashes. Besides the soap-maker always leaves a portion of alkali, which is combined with the silex. Exposure to air decomposes this, and then the alkali can be extracted by water. This is one great source of the active power of leached ashes. The course of this wonderful power, not only in fresh and in leached ashes, but in some degree in all *salts*, is to be found, in the action of the bases on geine and on silicates.

There is one great, simple principle running through all the classes of soils. It is this, *that in all salts and silicates the action of the base is ever the same in vegetation*. The base of the silicates and salts acts always in one uniform mode. Peculiarities of action depend on the *acid* constituent of the salt. Lime, for instance, acts ever the same, whether it is used as carbonate, sulphate, or phosphate, marl, plaster, or bone-dust. The salt is decomposed by the living plant. The various acids combine with the alkalies, as they are eliminated, from the decomposition of the silicates, and the lime, liberated, acts ever as lime. It acts in its *caustic* state, as a converter of insoluble into soluble geine. If this does not exist in the soil, all the lime in the world would not cause plants to grow. The base of the lime-salts acts primarily on geine, either solving the soluble or converting the insoluble. The same is true of alumine, iron and the bases of all salts. The same general rule applies to all alkaline, earthy or metallic salts and to silicates.

The order in which the farmer may apply salts is the following. Carbonate, phosphate, and sulphate of lime, carbonates, nitrates, muriates, and sulphates of alkalies. No salts, excepting carbonates, can be used in large quantities. The reason is at once explained by the principle of unity of action of the bases. The acid of the salts, eliminated, decomposes the geates, rendering the soluble insoluble, the acid combines with any free base, produced from the decomposition of the silicates, and thus prevents that forming soluble geine. Having saturated the bases, any excess acts then as free acid, poisoning the

vegetable, as oil vitriol, or muriatic acid would animals. In carbonates, the acid forms part of the food of plants. The alkaline geates are so very soluble, that when alkalies, as ashes for instance, are freely used, we lose a part, by its draining away, or in wet soils becoming too dilute. But a small dose produces all the beneficial effects of a large dose of lime. We have in ashes, not only the alkali to solve geates, but a very large portion of carbonate and phosphate of lime. Experiments are wanting to prove the relative value of lime and ashes. I should not deem it extravagant to say, that a bushel of ashes is equal to a cask of lime. The alkalies and their salts act more powerfully than any other substance, in solving and converting geine. Lime in all its forms ranks next. These produce always decided beneficial effects. The alkalies never fail. Ashes show their effects at once, due to the alkaline part, while their carbonate of lime produces more permanent effect. Lime, from peculiar states of the soil, may not show any immediate good result, but ultimately, this result is sure to follow. Permanent barrenness never is produced by the free use of carbonates. It surely follows the free use of all other salts, yet in small doses, they all and ever act beneficially, whenever their bases, combined with carbonic acid, would be beneficial.

But how do the elements of soil act? As I have stated in the report of Professor Hitchcock, by forming galvanic batteries with the roots of living plants. The most active element in the pile is the root. The soil, like the rocks from which it is derived, is slowly acted on by atmospheric agents. The effect of this action annually is imperceptible.

A single plant in one season will effect a greater amount of decomposition of a given portion of soil, than that produced by all the atmospheric agents in many years. The galvanic agency of plants is not confined to the soil, in immediate contact with their roots. It extends from these, in every direction, to undetermined distances. Hence there is a transfer, as is usual in galvanic decompositions, of substances quite remote from the plant. The whole plant contributes to this galvanic agency. It never exists in full force, perhaps not at all, till the plant has pushed above ground—acted on by air and light.

The soil, as we have explained, consists almost wholly of silicates, though it has been proved, that carbonic acid slowly decomposes these, and an argument, for the mutual action of the elements of silicates, derived from their admitted electrical states, yet the amount of this action is never measurable in one season. Being silicates, they have no tendency to act on each other. We can only excite this action by introducing new elements, salts, which in this sense only, can be said to

be excitants or stimulants. The silicates are the flour, the salts the yeast. The galvanic agency is excited by the salts, but above all, over all, and controlling all, this action of soils is the living plant. The influence of the last unfolds the mystery of the often repeated experiment of growing plants in pure water. Granting the water to have been chemically pure, the galvanic agency of the vegetable would decompose the containing vessel. The most barren sand would be made fertile by living plants. Sand containing no appreciable quantity of geine, may yet from its origin from sedimentary rocks contain carbon. Water it, and grow in it plants. Let these perish. They return to the sand, not only organic matter, the source of geine for a new crop, but various salts, of whose previous existence in the same it required the most delicate chemistry to detect traces. The living plant is a consummate analyst. This is the process nature employs. Mr. Keely, acting on this principle, and following out and assisting the natural mode, has opened the whole soul of raising crops. The memorable experiment of the Haverhill rye-field, ought to be engraved on the thresholds and lintels of every farm-house in the country.* It teaches us that salts, so important in agriculture, are within the reach of every farmer. Every farmer has a lime-quarry on his own land. He ought also to have constantly burning a lime-kiln. The farmer has on his own grounds, lime sufficient for all wants. Let all brushwood, unfit for the kitchen, be burned for the ashes. But let the *soot* too be saved. It is too valuable to be lost in air. Look at its composition as stated by Bracconnot.

GEINE	30.70
Extractive matter and nitrogen	20.
Carbonate of lime and traces of magnesia	14.66
Acetate of lime	5.65
Sulphate of lime	5.
Phosphate of lime and iron	1.50
Acetate of potash	4.10
Muriate of potash	.36
Acetate of Ammonia	.20
Acetate of Magnesia	.53
Silex	.95
Carbon	3.85
Water	12.50
	100.

* See Appendix E., page 113, First Report of Agriculture of Massachusetts.

I have nearly finished the analysis of Adams' soil. I will send it to you next week, together with the composition of the substance used by Webster, in Dracut.

With great respect,

I am very truly yours,

SAMUEL L. DANA.

Rev. H. COLMAN, Boston.

LETTER II.

LOWELL, *March 4, 1839.*

Dear Sir—I omitted an answer to one of your questions, in my letter of last week. I know of no particular affinity between plaster, or ashes, and *white* clover. The same crop follows a free use of bone-manure. This effect is due in all cases to a peculiar development of geine. This substance is probably, like many other hydro-carbon compounds, an unstable chemical combination, capable of existing in several definite portions of oxygene, hydrogen and carbon. Now each of these may develop the germination of particular seeds. We know that "*fungi*," always germinate best in decaying wood. Always we find crops of "*fungi*," about the decaying stumps of trees. I have noticed that the mops, which have been used for swabbing out vessels, in which cloth has been dyed with madder, when thrown aside in a moist, steamy room, often become covered with beautiful *fungi*. I had occasion last fall, to make a decoction of a large quantity of English Hay. (It affords a permanent yellow, with alumina.) This decoction was made with a portion of alkali, and several times repeated. The hay was then thrown aside in a pile out of doors. In a few days, it was filled in all parts with *fungi*, whose stems and roots were often a foot long, mounting up through the pile, and raising the upper layer of hay in large fork-fulls. Now, both here and in the madder, the seed existed in the vegetable fibre. Its vegetating power was not destroyed even by long boiling. *It required only a particular development of geine, to stimulate the germinative power of the fungus seed.* The exposed boiled hay rapidly developed this peculiar state. Probably the seed, of each class of plants, requires a peculiar development of geine. Let us understand, if we can, in what this consists, on what it depends. It may be a state always under our control. If we can always, and at

will, induce the state of geine, best fitted for each plant, then adieu to the doctrine of the necessity of a rotation of crops. The facts are already abundant to support the belief that rotation is unnecessary; and I shall look with great interest for your next report, for a fund of information on this point. That a peculiar state of geine is necessary for each variety of crop, is therefore a point to which the attention of the chemical farmer ought to be especially directed. It is this state, which allows one farmer to raise wheat, while in the same season, with land apparently the same, his neighbor fails.

I send you the analysis of Esq. Adams' soil.* It contains no trace of carbonate of lime, nor of alkaline salts.

Soluble geine	3.9228
Insoluble geine	2.6142
Sulphate of lime	.7060
Phosphate of lime	.9082
Silicates (granitic sand)	91.8488
	100.

The soluble geine of one analysis, 3.6914 grains, afforded

Geine	1.9258
Alumine and oxide of iron	.7715
Phosphoric acid	.2315
Magnesia	.3396
Loss	.4230
	3.6914

I presume that the soluble geine of all soils is similarly constituted. All which I have examined afford these elements. I think you must have misunderstood me in promising a written account of the effects of using the residuum from our yard, by Webster. I know not so much of the effects as you do. It contains a variable portion of phosphate of lime; and its average constitution is sulphate of lime 85, phosphate of lime 15—100.

* This refers to the farm of Wm. Adams, Chelmsford, Middlesex Co., noticed in page 97. His farm lies on the Merrimack river and embraces a large extent of alluvial land. On these meadows, as he assured me, he had been in the habit for twenty years past of raising wheat; and that in the course of that time he had suffered only from one failure. He stated likewise that he had never applied any lime to his soil.

It can therefore be easily imitated if necessary, by mixing plaster and burned and ground bones in this proportion.

With great respect, I am

Your most Obt. Servt.

SAMUEL L. DANA.

Rev. H. COLMAN, Boston.

[E.]

FEED FOR SWINE.

From Arthur Young's Prize Essays on Rearing and Fattening Hogs.

EXPERIMENT II.

"At the same time (March, 1765,) with the preceding trial, four lots of pigs, that had been weaned three months, were equally drawn from my farm-yard, five in each lot. They were confined as before, each lot to a sty, and cleaned at the same time; their food was as follows:—

- No. 1. Bran (wheat) mixt with milk.
- 2. Boiled Potatoes.
- 3. Boiled Carrots.
- 4. Raw Carrots.

They were kept to this food thirty days, and then viewed them as before with the same person.

- No. 3. Much the best,—boiled carrots.
- 1. Next,—bran and skim milk.
- 2. Next,—boiled potatoes.
- 4. Worst,—raw carrots.

Boiled carrots appeared very clearly on this trial to be an admirable food for hogs of this age;—Boiled potatoes appear also a good food, &c.

EXPERIMENT VI.

The month of December, 1766, twenty pigs, that had been weaned a month, were draughted into four parcels, and kept that month, separately in the following manner.

- No. 1. Boiled carrots.
2. Boiled potatoes.
3. Boiled turnips.
4. Boiled cabbages.

At the end of the month they were turned out and viewed attentively. The result was :—

- No. 1. The best,—boiled carrots.
2. Next,—boiled potatoes.
3. and 4. Equal,—all nearly dead.

Carrots continue in every trial superior to all common vegetable food. I am not at all surprised at the ill success of turnips and cabbages."

There are many other experiments detailed, giving similar results, of which our limits forbid the insertion.

[F.]

EXPERIMENT WITH DIFFERENT STEEPS FOR SEED WHEAT.

An observing farmer in Lowell, has sent me the results of some experiments on the effects of different steeps upon the vitality of seeds of wheat. In each experiment he took twelve seeds from the same parcel of wheat ; and as near alike as he could select them ; and after steeping, exposed them in planting to the same aspect and temperature. The heads of the columns will show the number of hours in which each parcel remained in the steep ; the figures in the columns, the number of seeds which germinated and came up.

TABLE.

TABLE.

STEEPS.	No. of Seeds come up.				
	One hour in the steep.	Twenty-three hours in the steep.	Fifty-one hours in the steep.	Sixty hours in the steep.	One hundred and twenty-four hours in the steep.
Urine,	11	0	3	0	0
Soap and Urine,	6	7	3	0	0
Salt Pickle,	10	3	3	2	1
Salt and Urine,	12	2	1	1	1
Water,		10			

The preparations of seeds for sowing, and the modes of keeping seeds, are matters of great importance, especially as so many nostrums are given for this purpose. The difficulty of importing mulberry-seed from China to this country, so that its vitality shall not be lost, is well known. Very little that has been imported has germinated, and the most serious and vexatious disappointments have been experienced. Great disappointments have occurred with some persons in their seed-corn. I myself was so unfortunate in one case as to lose three bushels of the seed of the Black sea wheat, from which I had with infinite pains picked out all the oats, cockle, and foul stuff, with which it abounded, by hand, from the man's having taken it without direction or leave, to be passed through a smut-mill, by which operation, I suppose, the skin of the seed was broken, and its vitality destroyed. The experiment above given, is on a very small scale; and cannot be deemed conclusive; but I consider it worth recording; and in the strong hope that it will lead to farther inquiries.

H. C.

[G.]

THE GRAIN-WORM, (*Vibrio Tritici*.)

Extract from an article in the Penny Magazine No. 87, for 1838, on the subject of the Grain-Worm, (Vibrio Tritici.)

Mr. Bauer, the naturalist says, "I have been enabled to ascertain many important facts, respecting the nature and properties of the minute animals engendering this disease. These experiments establish the fact, that the white fibrous substances, within the cavities of the distorted grains, consist of real organized animals endowed with the extraordinary property of having their power of motion suspended for a considerable length of time, and of having it again restored by the mere application of water."

He then goes on to detail some experiments, to show how these worms were propagated, and how he succeeded in inoculating sound grains with them, which I have not room to extract. He adds:

"The fact that at such an early stage of the vegetation of these inoculated seed-grains, such large worms were found, confirms my first supposition, that it requires several generations of these worms to introduce their eggs into the young germens; the large worms found in the substance of the young stem, were undoubtedly some of the original worms, with which the seed-corn was inoculated; for they were on the point of laying their eggs in that stage; and these eggs being propelled by the rising sap a stage further, then come to maturity, and again lay their eggs, and thus progressively reach the elementary substance of the ear, where they are finally deposited in the then forming germens, the whole probably requiring three or four such reproductions."

"My experiments for resuscitating the grain-worms, I have repeated almost every succeeding year to this day, and always with the same success; but I find that the longer the specimens are kept dry, the grains require to lay in water a greater length of time before the worms will recover; and that at every repetition of an experiment, a smaller number of worms recover their motion; and that after the same specimens (the produce of the grains inoculated in 1807,) had been kept dry *six years and one month*, the worms were all really dead; this period is the longest, which I have as yet ascertained, that these worms can retain their reviviscent quality. That this disease is con-

tagious, is sufficiently proved by the fact that it can at pleasure be inoculated on the soundest seed-corn. The infection, however, is not so generally nor so readily communicated as the diseases occasioned by the fungi of the smut-balls or dust-brand, a few infected ears of which are capable of contaminating and affecting the whole contents of a barn. Grains infested with these embryos cannot vegetate and produce again diseased grains themselves, but can only communicate the infection by coming in contact with the germinating seed-corn in the soil, by the moisture of which the worms are revived, and extricate themselves, which I have so often observed they do when kept sometime in water. Steeping the seed-corn in lime-water, in the same manner as advised for preventing the diseases occasioned by the fungi, is the most efficacious method of preventing the spreading of this disease. I have repeated the experiment by inoculating, very strongly, sound wheat-grains with the worms, and afterwards steeping them in lime-water; and the affection was always prevented. I have, also, steeped some sound wheat-grains in lime-water; and after having kept them in a dry state for some days, I inoculated them strongly with the worms; but on examining the plants, not one instance of the affection occurred. From these facts it is evident, that properly steeping the seed-corn in lime-water before sowing, is a sure preventative of the disease occasioned by the grain-worms."

[H.]

ON ARTIFICIAL MANURE.

Lowell, March 6, 1839.

I.—LETTER FROM S. L. DANA, M. D.

Dear Sir,—The first letter which I write to you, was penned at several sittings—for my head was so very bad, that I was often obliged to throw down my pen and busy myself for hours in darkness. This is my apology for the patchwork I sent you. I kept no copy. In the mean time to make the most of the present letter, I send you the following recipe for a top-dressing, which I think will be next best to "Flanders manure," Give it to the farmers, either through the N. E. F. or at your agricultural meeting to-morrow, or in both ways, or in any way

you please, so that it can be extensively tried, and the result made known. There is an alkali, now extensively imported from England, called "white ash," a carbonate of soda, containing from 36 to 55 per cent of pure alkali. It can be imported, cost and charges, for 4 cents per lb. and may be had of Delano & Whitney, or Grant & Daniels, Boston, for 5 cents per lb. If this is not at hand, take our own pearl ashes, or an equivalent in lye from ashes. Take 100 lbs. peat as sold, or the fine part from the bottom of a peat-stack—at any rate bruise the peat fine, put it into a potash-kettle, and 2 1-2 lbs. white ash, and 130 gallons water; boil for a few hours. Let it settle, dip off the clear for use—add 100 lbs. more of peat, 2 1-2 lbs. white ash, fill up with water as much as you have dipped off, boil again, settle and dip off. Add again 2 1-2 lbs. white ash, boil, settle, and dip off. This may be repeated five times. How much oftener I know not, probably as long as the vegetable part of peat remains. The clear liquor is an alkaline solution of geine. The three first boilings contain geine, alumine, iron, magnesia, and sulphate or phosphate of alkali, potash or soda, according as we have used *white* or *pearlash*. The alumine and iron are quite exhausted by the fourth boiling.

The dark colored brown solution contains about half of an ounce per gallon of vegetable matter. It is to be applied by watering grasslands or grain-crops just after sowing, or in any other way a farmer's quick wit will point out. The "*dregs*" may be mixed with other manure, or spread as a top-dressing; or put in the hill. Experience will teach—I only suggest. I don't pretend to turn a furrow, only to scratch up the ground. Those who have a steam-apparatus, had better put 75 lbs. peat, say 2 bushels, with 1 lb. 14 oz. white ash, and 50 gallons water into a hogshead; let the *steam* into the water and boil up, till the liquor increases to 100 gallons. Then repeat as above for the proportions.

The "Flanders Manure" claims a large part of its active power from its "*urca*." This by exposure is changed into ammonia, and then that acts as an alkali upon geine. In the recipe above, we have ingredients equally as powerful in this action; a plenty of salts, and vegetable matter. The last goes into the plant as an alkaline geate. It is then decomposed by the vegetable acids. The carbon, hydrogen and oxygen of the geine, are disposed of as the vegetable best knows how; the alkaline base becomes sulphate, phosphate, citrate, malate, tartrate, &c. of alkali, some or all of which are found in plants. Burn the plant, we reproduce carbonate of alkali from the vegetable acid

salts. Carbonates of lime, probably none exist in plants, except in some rare cases, (as in early saxifrage, "*saxifraga vernalis*) as an incrustation on the leaves. Nor do I believe its existence in the soil necessary to the growth of wheat.

But this is neither the time nor place to enlarge on this point.

Respectfully, I am

Very truly your friend and servant,

SAMUEL L. DANA.

Rev. H. COLMAN, Boston.

II.—THE URINE CISTERN

From Radcliffe's Flanders.

The urine cistern is constructed to contain any given quantity. The usual capacity of the vault is for 1000 *tonneaux* (barrels containing about 38 gallons, English) which quantity for the rape-crop, will manure little more than two bonniers, or seven English acres. But the cistern under the stables is nearly of double size; from this the exterior cistern is filled; and between both the farmer can fairly count upon manuring in the best manner, six bonniers or twenty-one English acres; or perhaps two bonniers in addition, of crops which do not require so much manure. The whole of this quantity (exclusive of farm-yard dung, ashes, composts, &c.) is produced by eight horses and thirty-six head of cattle, housed winter and summer in well constructed stables, increased by the adventitious aid of the rape-cake and the *vidanges* from the privies. In a cistern of 1000 *tonneaux*, it is not unusual to dissolve from 2000 to 4000 rape-cakes at 2 lbs. each. Indeed neither industry nor expense is spared for the collection of manure, as upon that depend the produce and fertility of a naturally bad soil. The farmer, who fails to make these exertions, is sure to be left in the back-ground.

The cistern is for the most part formed under the range of stables from each stall of which the urine is conducted to a common grating, through which it descends into the vault. From thence it is taken up by a pump. In the best regulated, there is a partition in the cistern, with a valve to admit the contents of the first space into the second, to be preserved there free from the later acquisition, age adding considerably to its efficacy.

This species of manure is relied on beyond any other, upon all the light soils throughout Flanders; and even upon the strong lands, originally so rich as to preclude the necessity of manure, is now coming into great esteem, being considered applicable to most crops, and to all the varieties of soil.

III.—HARLEY'S EXPERIENCE.

Harley who kept a dairy of a hundred cows, near Glasgow, says "that the advantage of irrigating grass-lands with cows' urine, almost exceeds belief. Last season, some small fields were cut six times, averaging fifteen inches in length at each cutting; and the swarth very thick."

IV.—EXPERIMENTS OF C. ALEXANDER.

The following extract transferred from the Farmer's Magazine to that spirited and valuable agricultural work, Young's Letters of Agricola, is so important and instructive that I subjoin it:

"This intelligent farmer, Charles Alexander, near Peebles, Scotland, had long been impressed with the great importance of the urine of cattle as a manure; and he set about to discover, by a long and well conducted series of experiments, the best method of collecting and applying it. He began by digging a pit contiguous to the feeding-stall, but distinct altogether from that which was appropriated for the reception of the dung. The dimensions of this pit, according to his own account, were 36 feet square, and 4 feet deep, surrounded on all sides by a wall; and the solid contents were 192 yards. Having selected the nearest spot where he could find loamy earth, and this he always took from the surface of some field under cultivation, he proceeded to fill it; and found that, with three men and two horses, he could easily accomplish 28 cubic yards per day: and the whole expense of transporting the earth did not exceed £41. 16s. When the work was complete, he levelled the surface of the heap, in a line with the mouth of the sewer, which conducted the urine from the interior of the building, on purpose that it might be distributed with regularity, and might saturate the whole from top to bottom. The quantity conveyed to it, he estimates at about 800 gallons; but as this calculation was founded partly on conjecture, for he measured not the liquor, it will be better and more instructive to furnish and proceed on DATA, that are certain and incontrovertible. The urine was supplied by 14 cattle, weighing about 34 stone each, and kept there for five months

on fodder and turnips. The contents of the pit produced 288 loads, allowing 2 cubic yards to be taken out in 3 carts; and he spread 40 of these on each acre, so that this urine in five months, and from fourteen cattle, produced a compost sufficient for the fertilization of seven acres of land. He states further, that he had tried this experiment for ten years, and had indiscriminately used in the same field either the rotted cow-dung, or the saturated earth; and in all the stages of the crop, he had never been able to discover any perceptible difference. But what is still more wonderful, he found that his compost lasted in its effects as many years as his best putrescent manure; and he therefore boldly avers, that a load of each is of equivalent value."

"Conclusions of vast importance are deducible from this statement: and I cannot resist the feeling, of placing them in a strong and advantageous light. They speak a volume of instruction; and if we are willing to learn, they must lead to a very material alteration in the construction of our barns. It appears, then, that in five months, each cow discharges urine which, when absorbed by loam, furnishes manure of the richest quality, and most durable effects, for half an acre of ground. The dung-pit, which contained all the excrementitious matter of the 14 cattle, as well as the litter employed in bedding them, and which was kept separate for the purpose of the experiment, only furnished during the same period 240 loads, and these, at the same rate, could only manure 6 acres. The aggregate value of the urine therefore, when compared with that of the dung, was in the ratio of 7 to 6; so that we are borne out by these premises in this extraordinary inference, that the putrescible liquor which in this province, and under the management of our farmers, is wasted and annihilated as far as regards any useful purpose, is intrinsically worth more than the dung, as an efficacious and permanent dressing: and if we take into consideration, that this latter manure is not treated with any skill and judgment, it will not seem surprising, that the culture of white crops has never been carried here to any extent, since we have despised and neglected the only means of creating them."

[APPENDIX I.]

AGRICULTURAL STATISTICS.

RETURNS

OF

BERNARDSTON, FRANKLIN CO.—MARLBOROUGH, MID-
DLESEX CO.—BARRE, WORCESTER CO.

1. *Agricultural Products of Bernardston,*

Farms.	Acres.	Hay.	Corn.	Wheat.	Rye.	Bar- ley.	Oats.	Buck Wh't.	Potatoes.	Ruta Baga and Turnips.
1	80	10	25	11				5	15	
2	70	15	50		70				50	12
3	70	8	50		10				300	
4	150	25	75		30		35		275	20
5	20	6	45				25		45	
6	90	15	50				50		50	
7	69	3	20						50	
8	80	8	10		10		20		110	6
9	92	20	75	18		10	25	20	250	
10	85	7	25					30	240	60
11	120	15	40	13	10		20		140	14
12	85	10	50		18		50	5	50	
13	70	10	40	6			60		70	28
14	180	30	150	6	30	6	80		100	
15	180	16	40		70		30	80	100	
16	80	5	65	2	70	3	70		130	32
17	84	20	80	3	60		50	8	120	
18	120	15	100	15	35	7	55	50	100	
19	170	8	50				50	12	150	
20	45	8	75				75	20	50	13
21	150	20	50		200		90	50	150	
22	200	8	90	7	40		12	110	80	
23	140	20	100	5	75		46	21	125	
24	200	12	80		30		80	50	200	
25	140	12	50		50		30	10	70	

Franklin Co. Mass., for the Year 1838.

Wool.	Beef.	Pork.	Butter.	Cheese.	Horses.	Oxen.	Cows.	Sheep.	Young Cat- tle.
36		450	300	50		2	4	13	8
20		690	170	70	1	2	3		
		600	175		1	2	2	*	
270		850	300		1	2	3	80	3
		900	700			1	7		5
40		400	300		1	2	3	16	6
30		500	350			1	3	9	4
30		690	200		1	2	2	11	2
30		550	300		3	2	4	17	3
75	600	600	250		1		3	28	1
100		935	300	200	1	2	4	29	5
40	550	600	550	400	1	2	6	17	4
20		800	200		1	2	2	14	3
50	600	1780	600	1000	2	2	7	20	7
20		800	300	250	1	2	4	11	3
30		500	250		1	2	3	14	
14		811	234		1	2	2	20	7
100	500	1025	275	150	3	4	3	40	8
		800	400	200	2	2	4	30	7
30		600	150		2	2	2	10	
20		1500	150	200	2	2	3	8	2
20	200	700	500	250	1	2	5	10	
225	600	1582	300	100	1	2	3	100	8
80	500	2200	300	100	1	2	5	20	10
30	1200	1200	325	40	1	2	4	15	5

Farms.	Acres.	Hay.	Corn.	Wheat.	Rye.	Bar- ley.	Oats.	Buck Wh't.	Potatoes.	Ruta Baga and Turnips.
26	75	12	80	10			75		50	30
27	350	25	160	46	160		125	25	150	
28	180	35	180	22	56	10	120	10	100	
29	200	40	200		150		100		150	
31	6	2½	20				10		30	2
32	90	20	50	10	60		20	3	150	5
33	100	12	50	21	12		20		250	
34	170	20	90		65		90		300	10
35	200	30	100	32	80		50		150	30
36	500	50	80	16	60		100		300	
37	200	20	70	10	20		30		200	40
38	100	20	30	12	50		50		100	50
39	126	20	125	25	25		15		350	
40	100	15	75	5	30		100		250	
41	90	12	50				50		300	
42	54	8	25				20		50	10
43	200	20	130		50		50		100	
44	120	10	100		100		100		200	
45	210	65	20		50		40		200	
46	300	25	100		50		100		300	
47	270	45	50		20		88	30	100	
48	100	20	90				60		130	
49	90	10	45				100		60	
50	120	20	20	5		10	35		50	
51	100	15	40		30		100		100	
52	250	50	50	12	90		75	35	500	500
53	96	12	75		40		30		50	

Wool.	Beef.	Pork.	Butter.	Cheese.	Horses.	Oxen.	Cows.	Sheep.	Young Cat- tle.
60		1100	200		2		2	16	3
90	3000	3200	400	160	3	4	6	30	6
200	600	1450	300	200	2	4	5	60	7
80		3000	300	250	2	4	4	11	7
		300	50		2		1		
40		850	250		1	2	3	20	7
70		700	150	50	1	2	2	25	4
100		900	250	200	1	2	4	44	8
350	650	1700	350	350	3	4	6	115	7
300		1500	700	700	1	2	7	100	5
100		775	300	300	2	2	4	50	2
100	1100	350	200		2	2	2	50	3
65		700	250	250	1	2	3	19	4
66		1500	260	160	1	2	4	28	8
		475	150		1	2	2		
19		400	175		1	2	2	10	
75	562	1000	300		1	4	4	25	12
75		1200	300		1	2	3	30	7
	600	700	300	200	2	4	3		8
125	900	1000	200	400	4	4	4	50	
50	450	1075	350		3	6	4	20	8
170	600	900	300	120	1	4	3	70	3
		750	200		3		2		
30	500	500	200	120	2	2	3	12	1
60	1000	350	234		1	2	2	23	6
1200	500	1500	200	100	2	4	3	315	15
150		1600	150		1	2	2	50	1

Farms.	Acres.	Hay.	Corn.	Wheat.	Rye.	Barley.	Oats.	Buck Wh't.	Potatoes.	Ruta Baga and Turnips.
54	7									
55	515	75	200	12	150		200	25	300	100
56	300	47	100	32	75		80		150	270
57	300	55	200	12	43		100	40	200	360

AGGREGATE

Of the above Returns from Bernardston, Franklin Co.

No. of acres in farms,	-	8289	Beef—pounds,	-	-	19,512
Hay—tons,	-	1129½	Pork, “	-	-	57,138
Corn— bushels,	-	4090	Butter, “	-	-	16,498
Wheat, “	-	368	Cheese, “	-	-	7010
Rye, “	-	2274				
Barley, “	-	46				
Oats, “	-	3086				
Buck Wheat, “	-	639				
Potatoes, “	-	8340				
Ruta Baga and Turnips,	-	1592				
Wool—pounds,	-	7185				

LIVE STOCK.

Horses,	-	-	82
Oxen,	-	-	132
Cows,	-	-	199
Young Cattle,	-	-	252
Sheep,	-	-	2635

The above procured by

December, 1838.

JOSEPH SLADE.

Wool.	Beef.	Pork.	Butter.	Cheese.	Horses.	Oxen.	Cows.	Sheep.	Young Cat- tle.
1250	2500	2000	500	340	2	6	6	450	11
250	1100	2100	600	100	2	4	7	120	9
800	700	1500	500		1	4	5	300	9

NOTE.

No person, who has looked over the statistical returns of the manufacturing and mechanical industry of the state, compiled the last year by the intelligent and industrious Secretary of the Commonwealth, can have failed to be astonished at their great amount. The result of inquiries into the products of agriculture, would, it is believed, produce equal surprise at their large aggregate. We can scarcely be said to have made a beginning in taxing the labor and skill of our husbandmen, and the capacities of our hard soil. Agriculture, with us, has been too much disdained; and readier modes of acquiring property have been greedily sought after, to the great prejudice of the interests of agricultural labor. It is hoped a better day is dawning upon us, and that the humbler but more substantial comforts of life, in the wholesome rewards of rural industry and independence, will be more justly estimated. The returns, which I have been enabled to obtain, are necessarily very imperfect. Many articles are entirely omitted, and the supplies for the family, furnished by the farm a large part of the year, have not at all been taken into the account. But enough is done, I hope, to convince the Government of the value of such returns, and to induce them to take effectual and early measures to obtain such returns, from every town in the state, with accuracy and fulness. Whatever serves to increase our estimate of the productive capacities of our state, strengthens an attachment to our native soil, abates envy and covetousness in respect to the advantages of other climes and soils, and quiets or extinguishes the restless and infectious spirit of emigration.

H. C.

II.—Returns from Marlboro' for 1838.

Dear Sir,—In compliance with your request we make the following statement :

Total number of acres in the town	-	-	19,480
In water 236 acres, in roads 597 acres	-	-	833
Improved and unimproved land	-	Acres	18,647

The number of farms is 227, which will give a little more than 80 acres to a farm. The farms are principally owned by those who occupy them.

We find, by the returns of the assessors, the following amount of Live Stock :—Horses, 265 ; Oxen, 328 ; Cows, 1211 ; three years old, 91 ; two years old, 73 ; yearlings, 76 ; Sheep, 309 ; Swine, 539.

Butter made and sold ; made, 90,960 ; sold for	\$21,120
Calves fattened, 1037 ; calves raised, 100 ; valued at	7,259
Swine fattened, 539 ; at 300 lbs. each, 161,700 lbs.	
Pork sold, including pigs fattened, and sucking pigs sold	12,170
Winter-apples, raised 3000 barrels ; sold 2000, at 1.50	3,000
Cider, 5000 barrels sold at 1.50	7,500
200 tons of English hay sold at 15 dolls.	3,000

Also hay cut, sufficient to keep all the horses, cattle and sheep in town, allowing two tons per head.

Beef-cattle fattened annually, 300 head, at 600 lbs. per head, making 180,000 lbs., of which about 90,000 lbs. are sold at 6.50 per 100	5,850
Vinegar made and sold annually, 1000 bbls. at 3 dolls.	3,000
Wood sold annually, 1000 cords at 6 dolls. per cord	6,000
Hops sold, 3000 lbs. at 16½ per lb.	500
Beans, Peaches, Pears, Cranberries, Quinces, Chesnuts, Poultry, Eggs, &c. &c. say	1,000
	\$70,399

GRAIN RAISED ANNUALLY.

Indian Corn, estimated at	-	-	-	bush.	17,000
Rye	-	-	-	"	3,000
Oats	-	-	-	"	3,000
Barley	-	-	-	"	5,000
Potatoes	-	-	-	"	34,000

Wheat and silk not worthy of enumeration.

The above grain and potatoes are all consumed in the town. The potato-crop falls short this year.

There were not so many swine, nor so much pork fatted this year as usual in town. on account of the corn having been cut short the two last years.

Shoes, straw-braid, and barrels are manufactured in the town to a large amount.

Cheese made is consumed in the town, and equals its wants.

The above statement is as correct as our time and means would admit of our making.

(Signed)

MARLBORO', Dec. 29, 1838.

CALEB WETHERBEE,
ABRAHAM HOWE,
ELI RICE,
JABEZ S. WETHERBEE,
STEPHEN MORSE.

REV. HENRY COLMAN.

III.—*Returns of the Agricultural Products of the town of Barre, in Worcester Co., for 1838.*

Number of acres—total	-	-	-	23,579
“ Cows kept	-	-	-	1,635
“ Oxen	-	-	-	432
“ Young cattle	-	-	-	1,080
“ Beef-cattle fatted	-	-	-	286
Indian Corn	bushels	-	-	13,316
Rye	do.	-	-	3,982
Oats	do.	-	-	15,653
Barley	do.	-	-	1,803
Hay	tons	-	-	6,453
Pork, fatted	lbs.	-	-	193,196
New milk Cheese	do.	-	-	305,731
Skim-milk Cheese	do.	-	-	29,060
Butter	do.	-	-	45,143
Potatoes	bushels	-	-	42,465

(Signed)

DAVID LEE.

BARRE, Nov. 6, 1838.

[J.]

GRAMINÆ—GRASSES OF BERKSHIRE COUNTY.

(From Professor Dewey.)

CINNA. 1. 2.

arundinacea. Indian reed. July. Low grounds; woods.

ANTHOXANTHUM. 3. 1.

odoratum. Sweet vernal grass. June. Meadows; upland.

ORYZOPSIS. 3. 2.

asperifolia. Mountain-rice. April. Dry woods on hills.*melanocarpa*. Black-fruited do. June. Dry hills.

DIGITARIA. 3. 2.

sanguinalis. Finger-grass. Aug. Roads and fields; common.

LEERSIA. 3. 2.

virginica. Cut-grass. Aug. Wet; marshy.*oryzoides*. do. do. do.

MUHLENBERGIA. 3. 2.

erecta. Dropseed-grass. July. Moist, low woods.

TRICHODIUM. 3. 2.

laxiflora. Thingrass. do. Dry fields.*scabrum*. do. do. Dry, open woods.

AGROSTIS. 3. 2.

vulgaris. C. Redtop. do. Fields; light soil.*alba*. White or yellow top. June. do.*lateriflora*. Aug. Wet woods, swamps, &c.*diffusa*. do. Fields.*setosa*. do. do.*sericea*. do. do.

ARUNDO. 3. 2.

canadensis. Reed-grass. July. Wet; marshy.*phragmites*. Large do. Aug. Negro pond in Stoc.

PHLEUM. 3. 2.

pratense. C. Timothy grass. June. Fields.

ALOPECURUS. 3. 2.

geniculatus, True foxtail grass. July. Wet, muddy bottoms.

PHALARIS. 3. 2.

americana. Wild Canary grass. July. Marshy.var. *picta*, C. Ribbon-grass. July. Gardens; yards.

DACTYLIS. 3. 2.

glomerata. Orchard-grass. June. About yards.

POA. 3. 2.

annua. Rooting grass. May. Gardens and fields.

compressa. Blue grass. July. Dry soil

pratensis. Meadow-grass. May. Fields; meadows.

dentata. Wet do. July. Muddy bottoms.

aquatica.

var. *americana.* Great do. Aug. Wet meadows.

trivialis. False redtop. July. Moist meadows.

nemoralis. do. June. do.

nervata. Large spear-grass. June. do.

elongata. July. Borders of wet meadows.

canadensis. do. do.

quinquefida. Huge redtop. do. Wet places.

AIRA. 3. 2.

flexuosa. Hair-grass. June. Dry, rocky hills.

truncata. do. do. Dry woods.

FESTUCA. 3. 2.

elatior. Fescue-grass. do. Wet meadows.

pratensis. do. do. Dry banks of meadows.

tenella. July. Sandy soil.

fluitans. Sarge do. do. Marshes and ditches.

DANTHONIA. 3. 2.

spicata. Wild oats. do. Sandy, dry hills.

TRisetum. 3. 2.

purpurescens. False hair-grass. June. High mead.

BROMUS. 3. 2.

secalinus. Chess. June. Cultivated fields.

purgans. False chess. May. Alluvial banks.

ciliatus. do. Aug. do. on streams.

pubescens. do. do.

ARRHENATHERUM. 3. 2.

pennsylvanicum. False oats. June. Light soil.

LOLIUM. 3. 2.

perenne. Darnel-grass. July. Roads and fields.

TRITICUM. 3. 2.

æstivum. C. Summer-wheat. June. } Rarely growing wild.

hybernum. C. Winter wheat. do. }

repens. Wheat or quack-grass. do. Gardens; fields.

AVENA. 3. 2.

<i>sativa.</i>	C. Oats.	June.	Rarely growing wild.
<i>sterilis.</i>	C. Animated oats.	July.	Gardens.

SECALE. 3. 2.

<i>cereal.</i>	Rye.	June.	Rarely growing wild.
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ELYMUS. 3. 2.

<i>hystrix.</i>	Lime. grass.	July.	} Alluvial banks; rivers,
<i>villosus.</i>	Wild rye.	do	
<i>canadensis.</i>	do. Lime-grass.	July.	do.
<i>virginicus.</i>	do	June	do. and dry hills.
<i>glaucifolius.</i>	Great wild rye.	July.	do.

PANICUM. 3. 2.

<i>crus-galli.</i>	Cockfoot-grass.	July.	Cultivated fields,
<i>latifolium.</i>	Panic-grass.	June.	Open woods.
<i>capillare.</i>	Hairy do.	Aug.	Cultivated fields.
<i>depauperatum.</i>	Short do.	July.	Moist pastures.
<i>nitidum.</i>	Slender do.	June.	Fields and pastures.
<i>glaucum.</i>	Bottle-grass.	July.	Cultivated fields.
<i>italicum.</i>	C. large do.	do.	Gardens.

ANDROPOGON. 3. 2.

<i>purpurescens.</i>	Broom-grass.	Aug.	Light sandy soil.
<i>furcatum.</i>	Forked spike-grass.	do.	Alluvial.
<i>nutans.</i>	Beard-grass.	do.	do.

HORDEUM. 3. 2.

<i>vulgare.</i>	C. Barley.	June.	
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SORGHUM. 3. 2.

<i>saccharatum.</i>	C. Broom-corn.	Aug.	Gardens and fields.
<i>vulgare.</i>	C. Coffee-corn.	do.	do.

ZEA. 20. 3.

<i>mays.</i>	C. Indian corn.	July.	
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JUNCI—(Rush-grasses.)**JUNCUS. 6. 1.**

<i>effusus.</i>	Bull-rush.	June.	Wet places; low streams.
<i>setaceus.</i>	Slender do.	do.	Low meadows.
<i>tenuis.</i>	Common bog-rush.	July.	Low grounds.
<i>nodosus.</i>	Tall bog-rush.	do.	Low meadows.
<i>bufonius.</i>	Frog-rush.	do.	Low, sandy wet places.
<i>polycephalus.</i>	Strong bog-rush.	Aug.	Wet pastures.
<i>pilosus.</i>	Hairy-rush.	April.	Border of moist woods.
<i>campestris.</i>	Large rush.	May.	Moist pastures.

ACORUS. 6. 1.*calamus.* Sweet flag.

May. Beside lowland brooks.

TRADESCANTIA. 6. 1.*virginica.* Spider-wort.

June. Gardens.

HELONIAS. 6. 3.*dioica.* False unicorn-wort.

May. Moist woods; Stockbridge.

VERATRUM. 6. 3.*viride.* Itch-weed. June. Alluvial soil; also on high brooks.**ALISMA. 6. 3.***plantago.* Water-plantain. July. Low, wet places.**SAGITTARIA. 20. 13.***sagittifolia.* Arrow-head. June. Low brooks.*latifolia.* do. do. do.*heterophylla.* Diverse-leaved do. Aug. Pond on Taconic Mt.*graminea.* Grassy do. do. do.**SCHEUZERIA. 6. 3.***palustris.* Flowering rush. June. do.**ERIOCAULON. 20. 13.***gnaphaloides.* Pipe-wort. July. do.**POTAMOGETON. 4. 4.***natans.* Pond-weed. June. Aquatic; rivers, ponds.*fluitans.* do. do. do. do.*gramineum.* Grassy do. July. do. low, muddy bottoms; ponds.*perfoliatum.* do. Ponds; Pittsfield,

REPORTS of the Valuation Committee in 1831—BERKSHIRE COUNTY.

TOWNS.	LAND—ACRES.											Total Number of Acres.
	Tillage.	English and Upland Mowing.	Fresh Meadow.	Salt Marsh.	Pasturage.	Wood.	Unimproved.	Unimprovable.	Owned by the Town or other Proprietary.	In Roads.	Covered with Water.	
Adams,	998 $\frac{1}{4}$	2900 $\frac{1}{4}$	...	...	4754	4137	4718	5067 $\frac{5}{12}$	2000	319 $\frac{3}{4}$	178	25,072 $\frac{3}{4}$
Alford, -	539	427	105	...	2369 $\frac{1}{2}$	44	38	1470	...	116	45	5153 $\frac{1}{2}$
Becket, -	281	2630	107	...	3557 $\frac{1}{2}$	...	7706 $\frac{1}{2}$	9368 $\frac{1}{4}$	...	...	...	23,650 $\frac{1}{4}$
Cheshire,	621 $\frac{1}{2}$	2246	361	...	3609 $\frac{1}{2}$	1285	2275 $\frac{1}{2}$	5289	50	321	153	16,211 $\frac{1}{2}$
Clarksburg,	95	214	22	...	380	...	3276	936	4091	70	24	9108
Dalton, -	488	1494	11	...	3139	6144	653	281	...	...	...	12,210
Egremont, -	2359 $\frac{3}{8}$	224 $\frac{1}{2}$	687	...	2169	1720	1876	814	...	252	150	10,251 $\frac{7}{8}$
Florida,	116	610	...	...	924	...	6935	3960	...	...	...	12,545
Great Barrington, -	2957 $\frac{1}{2}$	1691	885 $\frac{1}{2}$	...	5516	504 $\frac{1}{2}$	3824	6716 $\frac{1}{2}$	527	490	510	23,621 $\frac{5}{8}$
Hancock, -	501 $\frac{3}{4}$	2001	103	...	4470	2205	...	5636	5001	179	154	20,250 $\frac{1}{4}$
Hinsdale, -	291 $\frac{1}{2}$	1590	252	...	3134	3245	2847	761	456	327	12	12,915 $\frac{1}{2}$
Lanesborough, -	769	2511	354	...	5342	1844	2177	3234	269	250	455	17,205
Lee,	1134 $\frac{1}{4}$	1883	162	...	5923	2273	3787 $\frac{1}{2}$	804	...	269	331	14,566 $\frac{3}{4}$
Lenox, -	950 $\frac{1}{4}$	2096	...	...	3971 $\frac{1}{4}$	2285 $\frac{5}{6}$	715	1322 $\frac{1}{2}$	...	...	...	11,341 $\frac{1}{2}$
Mount Washington,	453	298	...	...	846	...	216	4108	...	108	75	6104
New Ashford, -	128 $\frac{1}{2}$	516 $\frac{1}{2}$	34	...	861	499	733	4288	...	65	...	7125
New Marlborough,	969	1880	533	...	5639	3200	2841	7733	2612	310	180	25,897
Otis, -	134	1764	179	...	3651	...	8843	4489	...	317	2673	22,050

TABLE—Continued.

TOWNS.	LAND—ACRES.											Total Number of Acres.
	Tillage.	English and Upland Mowing.	Fresh Meadow.	Salt Marsh.	Pasturage.	Wood.	Unimproved.	Unimprovable.	Owned by the Town or other Proprietary.	In Roads.	Covered with Water.	
Peru, - - - - -	222	3603½	19	...	4152	3730	2060	1064	...	...	...	14,850½
Pittsfield, - - - - -	1565	2771	454	...	8493	3347	3667	2939	...	...	...	23,236
Richmond, - - - - -	765½	1545	58	...	4991	2395½	826	81	...	360	90	11,112
Sandisfield, - - - - -	454	3450	7	...	6902	3772	6647	7064	...	805	396	29,497
Unincorporated land adjoining Sandisfield, - - - - -	...	...	...	...	130	...	155	182	...	...	...	467
Savoy, - - - - -	173	1310	...	...	1286	...	16,384	5078	...	239	35	24,505
Sheffield, - - - - -	4294	2510	2677	...	6145	5331	4953	2190	...	...	...	28,100
Stockbridge, - - - - -	1635½	1715¾	262½	...	4636½	2680½	773	1584¾	...	284¾	500½	14,073¾
Tyringham, - - - - -	480½	1938	...	...	2775	...	15,744	3671	...	560	475	25,643½
Washington, - - - - -	366	1683	...	...	2821	1533	8548	6410	...	...	...	21,361
West Stockbridge, - - - - -	1087	831	435	...	4280	1417	566	2127	4	265	255	11,267
Williamstown, - - - - -	1518	3904	...	...	8075	4401	1707	2438	...	224	121	22,388
Unincorporated land adjoining Williamstown, - - - - -	62½	202	...	...	725	425	346	434	...	...	...	2194½
Windsor, - - - - -	407	3056	22	...	3392	2579	8129	2154	...	492	449	20,680½

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ERRATA.

- Page 20—line 13—for “farm,” read “farmer.”
 “ 53—line 22—for “butter,” read “cheese.”
 “ 84—line 34—for “that native perception,” read “those native perceptions.”
 “ 94—line 10—for “Sheffield,” read “Great Barrington.”
 “ 144—line 27—after “Spurr,” read “of Sheffield.”

Massachusetts
Herkman
Berkshire

Colman, Henry

Second report of the agriculture of Massachusetts

Boston 1839

Oecon. 422 q

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